Initial Environmental Examination

March, 2016

VIET NAM: INTEGRATED RURAL DEVELOPMENT SECTOR PROJECT IN THE CENTRAL PROVINCES (Additional Financing)

SUBPROJECT: UPGRADING SUOI CAU WEIR AND ACCESS ROAD

Prepared by Central Project Management Unit – Agriculture Project Management Board - Ministry of Agriculture & Rural Development for the Asian Development Bank

CURRENCY EQUIVALENTS

(As of 19 August 2014)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	$0.000047
$1.00	=	VND 21,246

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected persons
CPC	Communal People's committee
CPMU	Central Project Management Unit
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
DPC	District People's Committee
EIAR	Environmental Impact Assessment Report
EMDF	Ethnic Minority Development Framework
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
DARD	Department of Agriculture and Rural Development
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
IRDPCP	Integrated Rural Development Project in Central Provinces
LIC	Loan Implementation Consultant
MONRE	Ministry of Natural Resources and Environment
PC	People's Committee
PPC	Provincial Peoples Committee
PPMU	Provincial Project Management Unit
RF	Resettlement Framework
SIR	Subproject Investment Report
UXO	Unexploded Ordnance

WEIGHTS AND MEASURES

km	–	kilometer
kg	–	kilogram
ha	–	hectare
m	–	meter

NOTE

In this report, "$" refers to US dollars.

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3. INTRODUCTION

Loan 2357(SF) for the Integrated Rural Development Sector Project in the Central Provinces (IRDSPCP) was approved by ADB on 15 October 2007. The total cost of the Project was estimated at $168.2 million and is jointly financed by ADB and Agence Francaise de Developpement (AFD). The IRDSPCP focuses on upgrading and rehabilitating rural infrastructure (rural roads and irrigation systems, flood control, markets and other key infrastructure). To date, 129 subprojects have either been completed or are nearing completion. Review missions had determined that the quality of construction of subprojects was good. The executing agency (EA) has developed the expertise needed to effectively implement the project and significant benefits are already accruing.

At the request of the Government, the potential for additional financing was investigated during the Mid-Term Review in 2011 and two review missions in 2012. About 39 new subprojects were found eligible for consideration in the additional financing. The amount of $70 million has been recommended and included in the country program for ADB Board consideration in 2013. The IRDSPCP - Additional Financing aims to rehabilitate and upgrade deteriorated critical productive rural infrastructure in support of the Government of Viet Nam's new National Target Program for Rural Development (NRD).

In consultation with the relevant provincial government and field investigation by the CPMU, a total of 23-24 eligible subprojects were initially identified based on 7 screening criteria which are focused on social economic development, safeguards, integrated development model, feasibility and sustainability. The types of subprojects are as follows:

(i) Small & medium-sized dam and reservoir improvements e.g., spillways, head-works, reservoir walls, and leakage control;

(ii) Rehabilitation of primary and secondary irrigation canals and river bank stabilization. Wherever possible key strategic investments such as the lining of critical lengths of canal or the reinforcing of existing water control structures will be chosen; and

(iii) Rehabilitation of commune to district, and inter-commune roads to improve linkages between higher level alignments (provincial and national routes) and lower level commune to village and inter-village roads. In addressing key issues of sustainability, designs will take into account the increased intensity and frequency of climatic hazards anticipated to result from global climate change, the local geology and terrain, potential change in utilization patterns (type and volume of traffic), and the longer-term availability of recurrent expenditure for operations and maintenance (O&M).

As part of the IRDPCP, UPGRADING SUOI CAU WEIR AND ACCESS ROAD subproject will be implemented at Xuan Phuoc commune - Dong Xuan district, Phu Yen province.

This Initial Environmental Examination/Environmental Protection Plan (IEE/EPP) document has been prepared to meet the environmental safeguards requirements of the ADB[1] and GOV[2]. The IEE/EPP contains the following information:

(i) Section 2 contains a description of the subproject;

[1] ADB Safeguard Policy Statement (2009)

[2] Law on Environment Protection 2014; Decree 18/2015/ND-CP and Circular 27/2015/TT-BTNMT

(ii) Section 3 contains a description of environmental conditions in the vicinity of the subproject;

(iii) Section 4 contains a describes potential environmental impacts of the subproject;

(iv) Section 5 contains the environmental management plan including mitigation measures, monitoring system and cost estimation for Environmental Monitoring System (EMS) implementation;

(v) Section 6 contains activities description on community consultation and subproject disclosure;

(vi) Section 7 contains conclusion and recommendation including summarization of main impacts and typical mitigation measures in the subproject's implementation.

4. PROJECT DESCRIPTION

Table 1. General information of subproject

DATA ITEM	SUBPROJECT DATA
GENERAL INFORMATION	
Subproject Name	Upgrading Suoi Cau weir and access road
Subproject Type	Irrigation
Executing Agency	People's Committee of Phu Yen Province
Sub-project owner	Department of Agriculture and Rural Development, Phu Yen Province
Sub-project Management Unit	PPMU of IRDPCP, Phu Yen Province
Address of PPMU's office	77 Phan Dinh Phung, Tuy Hoa City, Phu Yen province
Name and Title of Head of PPMU	Nguyen Tri Phuong Title : Director
Telephone, fax and email details of PPMU	Tel : 057.3841869; FAX : 057.3842704
Name of Environmental Officer of PPMU	Tran Con Son
Telephone, fax and email details of PPMU Environmental Officer	0972735248
SUBPROJECT DESCRIPTION	
New project or rehabilitation project	Upgrading Suoi Cau weir and access road
Surface water or groundwater source	Surface water source
Determination of water source	Suoi Cau Reservoir
Determination of basin area	36.6 km^2
For irrigation subproject, is water enough for living activities?	According to design assignments, the work will not supply water for domestic purpose
Reservoir/ weir and weir surface area	Area of water surface in the reservoir: 3.5 ha
Reservoir/ depth & length of weir	Suoi Cau Weir : Maximum Height: 4.0 m. Length: 148.5 m (left shoulder) to 267.0 m (right shoulder)
Number of intakes and outlets need to constructed	Intake: 02, outlet : 02
Length of constructed and upgraded canals	Right main canal: 553 m Left main canal: 2854 m Right primary canal: 2650 m
Type of canal and Width and depth of canal to be constructed and upgraded	*Right main canal* Canal type: Rectangle Width x Height : 0.6 x 0.7

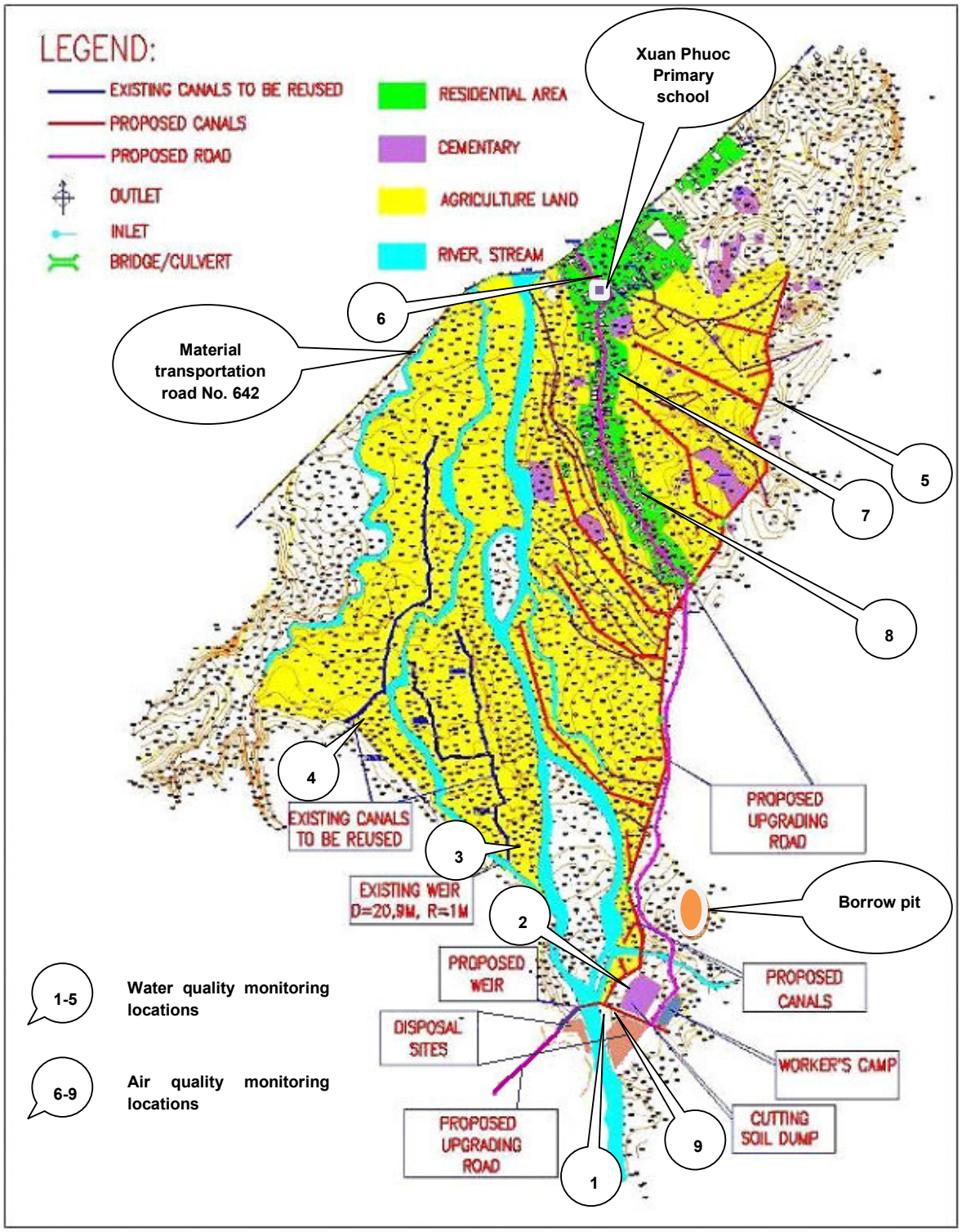
DATA ITEM	SUBPROJECT DATA
	Left main canal: Canal type :Rectangle Width x Height : 0.6 x 0.6
Length and width of approaching road	Total length: 2922.8 m Width: Wf= 6.00 m, Wc= 3.5 m Two alignments basically run along the current road: - Alignment 1 – 2,674.36m: Start at Km 0 + 00 crossing point with Provincial road No. 642 and end at the connection point with the Weir operational access road. - Alignment 2 – 248.44m: 120m away from the end point of alignment 1. Starting point connect to Weir operational access road. End point connects to current local path.
Number of weir	One weir : Suoi Cau Weir
Description of auxiliary works	*Spill way* Spill threshold elevation : 56 m Design spillway height : 4.0 m Design spillway width : 9.0 m Design spillway length : 65.6 m *Intake :* New building of intake Type of intake: box sluice Bed sluice elevation: 51.1 m Size of box sluice : (0.8 x 0.8) m Length of sluice : 27.88 m *Sand sluice* Size of box sluice : (0.8 x 0.8) m Length of sluice on the left side: 42.19 m Length of sluice on the right side: 45.05 m
Length and width of access roads to construction sites	The material transportation roads to constructions sites include provincial road No. 642, road No. 641 with a length of 15km, a width of 5m; concrete and gravel commune's roads with a total length of 20 km, a width of 3.5-5m.
Number of flows running through road - River - Lake Other flows	Alignment 1 will run through a streamlet originate from Suoi Cau stream.
Number of hills and mountainous running roads - Hills Mountains	 Not any Not any
CONSTRUCTION ACTIVITIES	
Construction commencement date	06/2016 (as expected)

<table>
<tr><th>DATA ITEM</th><th>SUBPROJECT DATA</th></tr>
<tr><td>(month/year)</td><td></td></tr>
<tr><td>Construction completion date (month/year)</td><td>06/2018 (as expected)</td></tr>
<tr><td>Number of construction workers</td><td>100 peoples (as expected)</td></tr>
<tr><td>Construction camps required (Yes/No)</td><td>Yes, 01 main camp</td></tr>
<tr><td>Number of mixed concrete station (16m^3/h)</td><td>01</td></tr>
<tr><td>Construction in rainy season (Yes/No)</td><td>Yes (if possible)</td></tr>
<tr><td>Asphalt/concrete mixing plant</td><td>No</td></tr>
<tr><td>Number of construction equipment and machines</td><td>
<table>
<tr><th>Vehicle/equipment</th><th>Quantity</th></tr>
<tr><td>Dump trucks of 5 to 10 tons</td><td>18</td></tr>
<tr><td>Excavators of 0.8 m^3 – 1.6 m^3</td><td>06</td></tr>
<tr><td>Bulldozers of 110CV</td><td>02</td></tr>
<tr><td>Concrete mixing machines of 250l and mortar mixing machines</td><td>02</td></tr>
</table>
</td></tr>
<tr><td>Location and area of borrow area or description of material source</td><td>- Filled soil will be taken from Phu Hoi borrow pit. The borrow pit is located in downstream of the weir (along the road to Phu Hoi hamlet) with an area of 30,000 m^2, expected exploit reserves is 36,000 m^3, about 500 m to 700 m far from the Site.
- Stone will be purchased from quarries in Xuan Quang 3, Dong Xuan district which are about 20 km from the site. These mines have licenses from DONRE of Phu Yen.
- Sand and gravel will be bought from licensed mines in Cai river located at a distance of 16 km from the site
- Steel, cement will be taken from Tuy Hoa city.</td></tr>
<tr><td>Type and approximate quantity of raw construction materials</td><td>
<table>
<tr><th>Item</th><th>Unit</th><th>Quantity</th></tr>
<tr><td>Excavated soil</td><td>m^3</td><td>32,429.88</td></tr>
<tr><td>Filling soil</td><td>m^3</td><td>42,991.03</td></tr>
<tr><td>Concrete</td><td>m^3</td><td>5,935.43</td></tr>
<tr><td>Formwork</td><td>m^3</td><td>22,838.46</td></tr>
</table>
</td></tr>
<tr><td>Description of discarded soil (estimated quantity and treatment method)</td><td>Excavated soil of all types: 32,429.88 m^3
Filling soil of all types: 42,991.03 m^3
Discarded soil quantity: 7,197.64 m^3. Discarded soil will be dumped at designated site in Xuan Phuoc commune. Xuan Phuoc CPC will be in charge for this temporary dumping site.
Excavated soil will be used for filling of Suoi Cau Weir, spillway and canal's embankment.</td></tr>
<tr><td>Quantity of solid waste generated from construction (calculated</td><td>Estimated soil volume: 300 m^3/month
Domestic waste: 0.5 kg/person/day, in total: 0.5 kg x 100 workers</td></tr>
</table>

DATA ITEM	SUBPROJECT DATA	
monthly following m^3) - Soil, sand, debris, etc - Domestic waste	x 30 days = 1500 kg/month	
OPERATION AND MAINTENANCE ACTIVITIES		
Subproject capacity (households or hectare)	Ensure water supply capacity from 50 ha before subproject to 180 ha will be irrigated stability after subproject in Xuan Phuoc Commune of Dong Xuan District	
Water treatment process	No. The weir and canals will be built for irrigation purpose. Local people use ground water for their living activities.	
Periodical canal dredging/pipe cleaning	After each crop season	
Subproject capacity (households or hectare)	Ensure water supply capacity for 180 ha in Xuan Phuoc Commune of Dong Xuan District	
RESETTLEMENT AND LAND ACQUISITION [3]		
Affected households	149	
Number of severely affected APs	0	
Number of APs that must relocate	0	
Total land area to be acquired (ha)	Temporary = 0 (From RP)	Permanent = 33,457 m^2
Agricultural land area to be acquired (ha)	Temporary= 0	Permanent = 31,312 m^2
Forestry land area to be acquired (ha)	Temporary = 0	Permanent = 0
Aqua cultural land to be acquired (ha)	Temporary = 0	Permanent = 0
Residential land to be acquired(ha)	Temporary = 0	Permanent = 0
Garden land to be acquired (ha)	Temporary= 0	Permanent = 2,145 m^2
Other land to be acquired (ha)	Temporary = 0	Permanent = 0
SUBPROJECT COST		
Total subproject cost (VND and $USD)	70,355,012,000 VND/ 3,311,447 USD	

[3] This data is obtained from Resettlement Plan

Figure 1: Map of Subproject and Surrounding Area



5. DESCRIPTION OF EXISTING ENVIRONMENT

Table 2. Environmental baseline

DATA ITEM	SUBPROJECT DATA
PROJECT LOCATION	
Commune(s):	Xuan Phuoc
District:	Dong Xuan
Province:	Phu Yen
Geographic location:	From 13°15'15'' N÷ 13°17'05'' N. From 109°03'00'' E ÷ 109°05'00'' E.
PHYSICAL ENVIRONMENT CONDITIONS	
Air quality, noise and vibration	Air quality & noise: Major activities in the subproject area are agricultural production activities There are no industrial parks and factories, the air pollutant sources are limited, therefore, ambient air quality have not been affected yet. The results of air quality analysis in the subproject area in 2013 of Phu Yen Center for Environmental and Natural Resources show that concentration of TSP is 0.03 mg/m^3; SO_2, CO and NO_2 are not detected and noise level is 64.5 dBA. They are within allowed values stated in Vietnamese Standards (QCVN 05:2013 and QCVN 26: 2010).
Climate and natural disasters	The rainy season lasts from September to December with the rainfall which makes up 70-80% of the total rainfall in a year. There are two to three storms will affect the subproject area per year and usually occur in October and November. And the dry season lasts from January to August with little rain and much sunshine and the rainfall only makes up 20-30% of the total rainfall in a year. Average rainfall reaches about 1606 mm in many years and the average temperature is 26.0^{0}C[4]. Floods in the rainy season are typical of areas with sloping terrain and short river lengths. Flood occur from September to December and mainly happen in October and November
Topography and soils	The subproject area is located in the central coastal region with the slope of terrain reducing towards the northeast. The altitude of the subproject area ranges from +30m to +60m. The topography of the subproject area is divided by mountains, hills and Suoi Cau stream; The soil in the subproject area contains silt and grey silt.
Waterbodies	There are Suoi Cau stream, and other small streams in the subproject area. The water for Suoi Cau stream mainly comes from Ky Lo River (Cai River) which is about 15 km from the site. There is no waste water of the subproject discharging into them.
Underground water	Groundwater is at shallow layers. As observed, deep well is 4-8 m from the ground surface. The results of water quality analysis at Long Ba hamlet on 19/03/2013 from Phu Yen Center for Environmental and

[4] Source: PPMU of Phu Yen province, SIR of upgrading Suoi Cau weir and access road, 2014

DATA ITEM	SUBPROJECT DATA
	Natural Resources show that parameters such as pH, hardness, TS, COD, NH4+, Cr, Fe, Cl-, CN-, NO2-, NO3-, coliform, E.coli are within allowed limits compared to Vietnamese Standard - QCVN 09: 2008/BTNMT
Water quality	According to Phu Yen Center for Environmental and Natural Resources, the results of water quality analysis in 2013 show that parameters such as pH, DO, TSS, COD, BOD, $NH4^+$, Cr, Fe, Cl^-, F^- CN^-, NO_2^-, NO_3^-, coliform, E.coli at Phu Xuan reservoir are within allowed limits compared to Vietnamese Standards (QCVN 08: 2008/BTNMT, Column B1). + Vietnam's current standards on surface water quality: - QCVN 08:2008/BTNMT - National technical regulation on surface water quality; + Vietnamese standard on waste water receiving sources: - QCVN 14:2008/BTNMT National technical regulation on domestic waste water; This regulation is applied as a substitution for Standard TCVN 6772:2000 – Water quality – Standard on domestic wastewater in the List of Vietnam's environment standards which must be applied - MONRE's Circular No. 02/2009/TT-BTNMT regarding regulations on evaluation on waste receiving capability of water source.
Flooding	Flooding often occurs twice a year (mainly flood from October and November).
Terrestrial flora and fauna	+ Terrestrial flora: mainly rice field, sugar cane, bean and vegetables gardens in residential areas; + Terrestrial fauna: cow, pig, chicken, ducks, etc. + Terrestrial flora and fauna in subproject area are not listed in Vietnam's Red Data Book.
Protected areas	In subproject area, there is no historical or historical vestiges;
Environmental sensitive points	+ Residential area in Phu Hoi, Cay Xoai 1, Cay Xoai 2 hamlets, Xuan Phuoc commune, Dong Xuan district; + Xuan Phuoc primary school;
SOCIAL ENVIRONMENT CONDITIONS	
UXO	The proposed canals and weir are located in the area of agriculture fields so the possibility for UXO is low. However, PPMU will sign a contract with Provincial Military Command for UXO clearance;
Land use	Agriculture land: 3074.26 ha; other land: 4695.74 ha; Agriculture: mainly plant rice 2 crops/year;
Nearest residential land	Residential areas are located along the management road including Phu Hoi hamlet. The distance between nearest residential houses and the proposed management road ranges from 2 m to 20 m while the distance between nearest residential houses and the proposed weir and canals ranges from 500m to 700m;
Rural infrastructure	Rural infrastructure works in subproject including electric system, roads, railway, schools at all level (01 kindergarten, 02 primary schools, 01 secondary school), 01 medical centers, public houses at communes/districts, etc. The electric and communication cables were

DATA ITEM	SUBPROJECT DATA
	arranged in parallel with the route;
Access to Water Supply & Sanitation and Solid Waste Management	There is no tap water in the subproject area. Local people use ground water for domestic purposes. Drinking water is purchased from the market. Many people in the subproject do not access to the sanitary latrines. There are no public drainage systems in the subproject area. Waste water is drained into low land area such as ponds, gardens etc. There is no service in rubbish collection in the subproject area. Rapid decomposable organic matter is reused to feed pigs or chickens. The high heating value of rubbish is burnt.
Agriculture	+ Agriculture: mainly wet rice, bean, corn, vegetable, sugar cane, potato;
Population	Estimated number of people of Xuan Phuoc commune in the subproject area: 10,852 people. Population density is 140 persons/km^2 [5]
Ethnic minorities	There are no ethnic minority people in the subproject area;
Livelihoods	+ The main employment of the community is agriculture and handicraft production, occupying 98% of the local population. + The average income is VND 4.9 million/person/year; + The level of poverty (following the new poverty line made by the Government): number of poor households makes up 21.16% of the population.
Physical and cultural heritage	There is no cultural heritage or reservation area in the subproject region;
Public health	Diseases which often occur in the summer are diarrhea, petechial fever Besides, there are respiratory diseases like sore throat, sinusitis
Traffic and transportation characteristics	+ Current traffic volume is small, only serving agriculture, living activities in villages and communes and some construction activities at small scale; + Main traffic means include bicycles, motorbikes and some transport vehicles in construction activities on small scale;

[5] Source: PPMU of Phu Yen province, SIR of upgrading Suoi Cau weir and access road, Phu Yen Province, 2014

6. ENVIRONMENTAL IMPACT SCREENING

Table 3. Environmental impact screening

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Pre-Construction Stage Impacts					
Plan Spoil and Waste Disposal	Yes	N/A	N/A	N/A	Waste Management and Spoil Disposal Plan is prepared for handling, storage, treatment, transport and disposal of solid and liquid wastes, hazardous materials, hazardous wastes and excavation spoils. Ensuring disposal of excavation spoils will not cause negative visual impacts. The plan will also provide details of a trip ticket system to ensure that contractors dispose excavation spoils in approved areas. Such system will be designed so that the PPMU and construction supervisors could readily monitor the volume and disposal site of excavation spoils, and to ensure that the total volume of spoils disposed will not exceed the maximum capacity of disposal site (landfill). Domestic waste collection and management also need to set plan during this phase to avoid missing implementation resources and sanitation issues on the site.
Disturbance of unexploded mine and bomb (UXO)	Yes	Minor	Negative	Temporary	**Description:** UXO can be left in some areas that have not been used for construction. Mine detector in subproject area may obstruct moving or agricultural works of local people. However, to help in securing safety for people UXO clearance team will be hire from Provincial Military Command. **Location:** Along the weir, new irrigation route and two road alignments. **Objects:** Local people living and cultivate in the subproject area. **Affected level:** Minor due to this affect will be temporary and can be controlled by hiring mine detector team. **Time of impact:** Temporary

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Effects on households from loss of residential or agricultural land	Yes	Minor	Negative	Temporary	**Description:** There are 149 households in Dong Xuan commune be affected by subproject. The main impacts include loss of 33,457m^2 of land, which include 3.13 ha of agricultural land and 0.2145 ha of garden land. **Location:** Phu Hoi hamlet - Xuan Phuoc commune; **Objects:** Affected households **Affect level:** Small, due to no households must relocate or loss of residential land in the subproject area and no household will be serious affected due to loss more than 10% of total land holding. **Time of impact:** Permanent
Construction Stage Impacts					
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	Yes	Minor	Negative	Temporary	**Description:** Stone, sand and soil will be purchased from mines as mentioned above. The owners of these mines take responsibilities for any environmental problems related to vegetation clearing and water quality. Materials from these mines will be transported to construction sites by contractors. Transportation of material to the construction sites will generate noise, dust which affect local residents along transportation routes and near the construction sites. Filling soil will be taken from Phu Hoi borrow pit. It is located 500m to 700 from the construction sites. Transporting roads are concrete and gravel (Xuan Phuoc commune's roads) and asphalt (road No. 642). Some sections of commune's roads are earth road. Soil transportation to the construction sites will affect the local roads of Xuan Phuoc commune **Location:** Surrounding areas in the material mine and borrow pits as well as along the transport routes such as: road No. 642, Xuan Phuoc commune's roads and other inter village roads. **Affected objects**: Local people living along the local roads (Xuan Phuoc

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					commune in Dong Xuan District and other inter-commune roads….) or close to the material mines, borrow pit area. The workers are working on the material mines, borrow pit, and drivers. **Affected level:** Small, the impacts by dust and noise will not be seriously because (i) loading capacity of vehicles is less than 10 tons, (ii) communal roads are almost structured of concrete and gravel with the width of 3.5-5m; (iii) small number of vehicles will be mobilized on the site (total excavated soil is about 24,956 m3 which must be transported; requires about 18 tip trucks with a capacity of 5 to 10 tons for period of 24 months); **Time of impact:** 24 months during construction phase
Erosion or sedimentation caused during clearing or earthworks	Yes	Negative	Minor	Temporary	**Description:** In the work of excavating for the proposed weir, the canals the road and filling the banks of the proposed canals, the road, construction of on the canal structures such as culverts, water inlets and outlets, if excavated soil is not collected then siltation will be occurred. It will be able to cause stuck in other canals that pass through the proposed canals, in Suoi Cau stream and create filling situation that affects cultivation areas of residents. Earthwork activities will also change soil structure and raise the amount of unconsolidated sediments at the borrow pit in Phu Hoi hamlet and disposal site in Xuan Phuoc commune. When it rains, runoff of rain water will take away them into the surrounding water bodies causing sedimentation and erosion also. Runoff water could also take construction material such as sand, soil from material storage sites into the surrounding water bodies if material stored for a long duration at the construction site. **Location:** The intersections of the proposed canals and existing irrigation canals, downstream of Suoi Cau weir. Borrow pit in Phu Hoi hamlet and disposal site in Xuan Phuoc commune. Temporary material storage sites. The fields nearby the proposed canals and road in Phu Hoi hamlet- Xuan Phuoc commune; **Affected objects:** • Loss of topsoil affecting productive land.

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					• Surface water of water bodies along the road • Agriculture field along the road • Local peoples living near Suoi Cau weir and along proposed access road **Affected level:** It is minor due to most of the excavated soil volume will be reused to fill up banks of proposed canals and road. The remains will be transfer to the designated dumping site in Xuan Phuoc commune. **Time of impact:** 24 months
Impacts arising from temporary storage areas and transport activities including dust, noise and water quality	Yes	Negative	Average	Temporary	**Description:** Dust could be arising from sand or soil stockpile if they are not covered carefully. Runoff water could bring these material into the surrounding water bodies when its rain. Loading and unloading construction material at the temporary storage site could create noise and affect nearby households. Construction material transportation activities could also create noise and dust and affect people living along the material transportation route. **Location:** Temporary storage sites for stone and sand in the subproject areas; Steel, cement storage sites in Xuan Phuoc CPC; Households along the material transportation route in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets – Xuan Phuoc commune; and Xuan Phuoc Primary School. **Affected objects:** Local residents and workers on the site especially pupils of Xuan Phuoc Primary School. **Affected level:** Even the number of material transportation vehicles is not large and the traffic density is low (15 cars; trucks / 12h according to SIR of the Subproject) The impact is average due to long impact duration and the transportation route will go through residential area, especial Xuan Phuoc Primary School **Time of impact:** 24 months
Pollution of waterways,	Yes	Negative	Small	Temporary	**Description:** In the process of excavating, dredging the canals, weir, road

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils					and filling banks of the canal, filling the road and constructing on canal structures, oil and grease leakage from construction machines will be able to cause water and soil pollution. Oil and grease leakage from machine maintenance area could also contaminate soil and discharge into surrounding water bodies by runoff water. On the other hand, if waste such as spoiled soil, sand will not be collected and controlled strictly then it will able to increase turbidity in surface water. The level of turbid water depends on the layout and control of excavated soil and temporary disposal sites of excavated soil; **Location:** At the downstream of Suoi Cau weir, the intersections of the proposed canals and other canals as mentioned above, and surrounding areas close to construction sites in Phu Hoi hamlet – Xuan Phuoc commune; **Affected objects:** • Local peoples living near Suoi Cau weir and along proposed road. • Water quality of Suoi Cau stream **Affected level:** Small The affected level is insignificant because (i) The number of construction machines is not large and will not concentrate to operate in a short duration; (ii) the construction is scattered over 6.057 km long of the canal and 2.92 km long of the road, therefore the concentration of the uncontrolled waste, oil and grease leakage is not remarkable; (iii) discarded soil will be transported to the designated disposal site in Xuan Phuoc commune. **Time of impact:** 24 months
Changes of water quality due to changes in inlet operation which cause	No				The proposed canals are far away from the coastal area, not affected by tide. Therefore, the process of construction does not affected by salinity intrusion, aluminiferous

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
sedimentation or aluminiferous intrusion or pollution					
Making sensitive flora disappeared and deteriorated	No				The proposed weir, canals and road are located on fields or near residential areas. The site clearance for construction of the canals only affects people's crops and weeds. There is no sensitive flora surrounding the subproject area.
Dust or exhaust fumes from construction equipment.	Yes	Negative	Minor	Temporary	**Description:** Construction machines will generate gaseous emissions (NOx SOx, CO, CO2, etc.) when they are in operation. Transportation vehicles could also create dust along the transportation route. These gaseous and dust could cause health problems to the residents who living near the construction site and along the transportation route. **Location:** People living along the roads and construction sites at Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets - Xuan Phuoc commune and on the construction sites. **Objects:** Local people living along the proposed road in Xuan Phuoc commune and workers on the site if they will not fully equipped by PPE; **Affected level:** Small The impact is minor due to upgrading the canal and road does not cause serious dust or air pollution because i) the characteristics of the water facilities is constructed in moisture soil that does not cause dust (ii) the subproject area is rural, the construction site is spacious, (iii) number of construction machine is not many and distributes over the subproject site; (iv) the section of transportation route go through the residential area is already paved. **Time of impact:** 24 months

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Noise from constrution equipment	Yes	Negative	Average	Temporary	**Description:** Construction activities such as clearance, excavation of foundation, soil excavation will cause the generation of noise and vibrations to be felt within the construction sites and adjacent areas. Material transportation could also generate noise and vibration along the transportation route. It will cause disturbance to the activity of local people. **Location:** Along the transport roads (the commune's road and road No. 642) and construction sites at Phu Hoi, Cay Xoai 1, Cay Xoai 2 hamlets - Xuan Phuoc commune and construction sites; **Objects:** Local peoples living along the road in Phu Hoi, Cay Xoai 1, Cay Xoai 2 hamlets of Xuan Phuoc commune and located close to construction site, workers on the sites. **Affected level:** Average Even (i) the number of construction machine is not many (02 bulldozers; 06 excavators; 18 dump trucks, 02 concrete mixing machines) and distributes over 16 km length; (ii) the main construction activities will happen mainly on the field, away from residential areas, the impact is accessed as average as long construction duration and material transportation route will go through residential area of Phu Hoi hamlet and especially Xuan Phuoc Primary School. **Time of impact:** 24 months.
Increasing time and area of flooding	No				Suoi Cau Weir and its canal system take the function of irrigating water for cultivation areas and take no function of drainage; therefore the drainage of the area will not be affected by construction activities;
Impact on traffic or conditions for property access	Yes	Negative	Minor	Temporary	**Description:** The construction of Suoi Cau weir, Spillway, canals could block or limit the movement of local people when they go to the field. Upgrading the management road and transportation of materials will affect the movement in the subproject area, impact transporting goods of local

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					people, disturbance to individual households and cause risk for safety traffic. The material transportation activities will also make difficulties for pupils to go to school in Xuan Phuoc Primary School and limit the access to public offices in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. **Location:** In the subproject area and along the material transportation roads including commune's roads, road No. 462 and the proposed road; **Objects:** Local people who has cultivated land in the subproject area and people living along commune's road; road No. 642 and proposed road. **Affected level:** Small Impact on traffic is small because the traffic in the subproject area in low density with main transport vehicles of local peoples are motorbike and bicycle; people can use branch route in the communes to travel during construction. **Time of impact:** 24 months
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	Yes	Negative	Minor	Temporary	**Description:** The local infrastructure system can be affected by project construction activities. Electric and communication cables along the road could be damaged by the transportation vehicles. The transportation road itself and the culverts of the road could be damaged by the movement of the vehicles. Building near the road could be affect by the vibration of the passing by transportation vehicles. **Location:** Along material transportation road: Commune's roads, road No. 642 **Objects:** Local people living in Xuan Phuoc commune and the people using electric from cable system which goes along and cross the material transportation road. **Affected level:** Small The impact is minor due to low traffic density in the commune's roads of Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets and the transporation vehicles are not large.

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					Time of impact: 24 months
Employment or livelihood benefits from employment of local people	Yes	Minor	Positive	Temporary	**Description:** Contractors will use local laborers for simple works such as smooth the road, moving soil, give priority to poor families, female householders, woman if they need jobs. It aims to raise their income, create more jobs and contribute to poverty reduction for local community. **Location**: Local people in the subproject areas such as Xuan Phuoc commune. **Objects:** Local people in the subproject areas in Xuan Phuoc commune. **Affected level:** Small This is a positive impact; however, it requires the coordination between the contractor and CPC of subproject communes and nearby communes in recruiting local labors. (contractors often prefer to engage their own trained workforces rather than training unskilled laborers) Contractors will use local laborers for simple works such as moving soil; give priority to poor families, female householders, woman if they need jobs. It aims to raise their income, create more jobs and contribute to poverty reduction for local community. **Time of positive impact:** 24 months
Effects on nearby heritage items such as graves, pagodas etc.	No				The subproject does not affect any national or local heritage items such as pagodas, temples, gravestones nearby the proposed canals.
Construction workers cause social disruption	Yes	Negative	Minor	Temporary	**Description:** Construction workers from other area could bring outside disease to the subproject area. The concentration of workers in the work camps could also create a good environment for diseases such as sore eyes, cholera, flu and respiratory problems. Social aspect: concentration of a number of workers could lead to social

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					problems such as gambling, drug addiction, prostitute, violence, conflict amongst workers, or between workers with local people. Workers have to get temporary residence certificate to avoid social disruption in the subproject area. **Location:** Workers' camps along the proposed canal the road and residential area at Phu Hoi and Cay Xoai 1 and Cay Xoai 2 hamlets - Xuan Phuoc commune. **Objects:** Affect directly on workers and indirectly on the community near the construction sites in the residential area in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. **Affected level:** Small Impacts are at unremarkable levels because the construction activities of workers can be controlled by working regulation in the construction site and construction duration is not long (within 24 months expected); **Time of impact:** 24 months
Generation of excess spoil	Yes	Positive/Negative	Minor	Temporary	**Description:** The total estimated quantity of excavated soil is 32,429.88 m^3. The total estimated filling soil is 42,991.03 m^3. Most of the excavated soil will be reused for filling purpose. The quantity of soil which could not be reused is about 7,197.64 m^3. This amount of excess spoil will be transfer to the designated dumping site in Xuan Phuoc commune. The transportation activities will also affect local people living along the transportation route. On the other hand, there is a number of spoil generated from dredging material which is rich in nutrition and local people could utilize them as fertilizer for tree planting in their garden. **Location**: Along Construction sites in Phu Hoi, Cay Xoai 1, Cay Xoai 2 hamlets – Xuan Phuoc commune and the proposed weir site; **Objects:** People in the subproject area, living along commune's road, road No.642 and near the temporary dumping site in Xuan Phuoc commune **Affected level:** Small

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					This impact is insignificant because in fact, during the construction, some excess spoil will generate but backfilling soil is also required at banks of the proposed canals and road shoulders. Thus, they can be used to fill the banks of the proposed canals and road. **Time of impact:** 24 months
Risk to health and safety to local people or construction workers	Yes	Negative	Minor	Temporary	**Description:** Dust, exhaust gas and noise generating from earthworks, transporting of material, construction activities and operation of machines, etc. These factors cause direct effects on health of workers and local residents. Material transport and construction activities on the existing road may create the risk of effects on traffic safety and houses structure on road sides especially Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets due to traffic signs and signals are insufficiently arranged, awareness of residents in rural areas on traffic safety is not high. Waste and wastewater from construction activities and worker camps could also create a favorable environment for the outbreak of some respiratory diseases of local people as well as workers. Accidents may occur if during the construction, workers are not provided with safety equipment and obey construction regulations. **Location:** Residential area near the construction sites and material transportation roads; Construction sites along the proposed canals. **Objects:** • Local people in the subproject area • Local people living along road in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets and other people who using commune's road and road No. 642. • Workers working at the site. **Affected level:** Small

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					Exhaust fume, dust and noise do not have remarkable affects on residents because of small quantity, low transport frequency of trucks (04 to 07 trips/day) and separated during the construction period (within 24 months as expected). The traffic density is low in the subproject area. (15 cars, trucks / 12h according to SIR of the Subproject) **Time of impact:** 24 months
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	Yes	Minor	Negative	Temporary	**Description:** Solid waste that will be generated from construction mainly includes domestic waste of workers and scraps of transported soil and stone, debris, mud. Domestic waste generated from construction workers is about 1.5 tons/month. Construction waste generated during construction activities is estimated 300 m^3/month **Location:** Workers' camps in the proposed weir area and along the proposed canals and road in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets; material stores, Phu Hoi borrow pit. **Objects:** Surrounding environment and local residential area. **Affected level:** Small Number of worker is not big, total about 100 workers, construction activities mainly include excavating 6.057 km of the proposed canals; excavating 2.92 km of the proposed road, and excavating for the proposed weir, therefore, generation of construction waste is not so much. On the other hand, the construction works will be implemented in a long distance and in all 24 months so the concentration of waste is not much. **Time of impact:** 24 months
Impacts on irrigation activities	Yes	Negative	Minor	Temporary	**Description:** Construction of the proposed weir and upgrading the primary canals requires dry construction area, meaning of stop water flow in the existing primary canals. There will be a conflict between water demand for agriculture and construction demand during cultivation period and construction time; The construction time in 24 months will mainly affect the

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					cultivation of 2 winter-spring crops in 2016 and 2017. **Location:** The proposed canals and downstream cultivation area including Xuan Phuoc commune; **Objects:** - Cultivated land in Xuan Phuoc commune. - Local people who have their cultivated land in Xuan Phuoc commune **Affected level:** Minor Irrigation schedule could be changed flexibly to construction time; Moreover, due to lack of irrigation water, there is over 150 ha of production area having no gravity irrigation and can only be cultivated in winter-spring crop with pumping so impact level is considered at minor; **Time of impact:** 24 months
Environmental impacts due to inappropriate enivronmental recovery responsibility	Yes	Minor	Negative	Temporary/ Permanent	**Description:** If after construction work has been completed, the sites are not cleaned up, construction and domestic waste will pollute surrounding environment. If site restoration such as replanting trees; grass; filling up construction pit; removing camp site have not been implemented in accordance with environmental regulation then the environmental issues like erosion, sedimentation and accident may occur. Construction waste and waste soil could also impact on the soil quality of the temporary acquired land area. **Location**: in the entire subproject site; temporary disposal site in Xuan Phuoc commune. **Affected object**: - Borrow areas. - Land and water near the proposed canal and disposal, borrow areas. - People who living near the proposed road and camp sites, disposal and borrow areas. **Affected level**: This impact is minor impact. Even the construction time is 24

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					months, the amount of work load is not much, construction machines and about 100 workers will not be mobilized in the same time. **Affected time**: Mainly 24 months during construction time.
Impacts in operation stage					
Inundation of sensitive vegetation from operation of the canal	No				Construction of the weir and main canals, upgrading the primary canals and management road will not cause flooding situation due to increment of irrigation area. On canal structures such as inlets, outlets and other controlling systems will be operated properly to handle flood. Moreover, there is no sensitive vegetation in the subproject area.
Excessive exploitation of surface water will make water supply capacity cannot catch up with demands and/or cause conflicts among households	No				Reasonably exploit the surface water according to approved design task of the works with an irrigation capacity of 180 ha; Increase the ability to meet the water demand for agriculture, especially the area has not been watered for long time; thereby harmonize the conflicts between households using water.
Water quality is changed due to salinity intrusion, aluminiferous water or sedimentation	No				The subproject area is not affected by seawater or tide, so it is not affected by salinity intrusion or alumiferious; The proposed canals will be linned by concrete so the water will not be polluted by sediment.
Water is exploited at sensitive ecological places/or reservation areas	No				There is no sensitive ecological areas or protection areas in the subproject area;

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Productivity is improved by increase of irrigation capacity	Yes	Positive	Significant	Permanent	**Description:** Increasing irrigation area of 180 ha compared with current cultivation area; cultivation productivity and diversification plants in the subproject area are increased; **Location:** Xuan Phuoc commune. Affected objects: Local people in beneficiary area (Xuan Phuoc commune) **Affected level:** Significant
Cultivation habits will be changed due to the turning of land use for agriculture purposes	Yes	Positive	Significant	Permanent	**Description:** The utilization area of agricultural land will be increased at less cultivated area where often occurs drought in Xuan Phuoc commune **Location**: Xuan Phuoc commune **Affected objects**: Local people in beneficiary area **Affected level:** Significant
Reduce nutrition in the soil due to over-irrigation	Yes	Minor	Negative	Permanent	**Description:** There is not statistics or research in the area regarding the percentage loss of nutrients. Actually, the rate of soil nutrient loss is very small due to the cultivation in the plain with small slope that can not cause drift of soil when it rains or excessive irrigation. After the proposed canals are completed, the regulating system will be facilitated and more flexible, hence, the land will not lose nutrients due to excessive irrigation. **Location:** beneficiary area in Xuan Phuoc commune. **Affected objects**:- Soil quality of Cultivated land- Local people in beneficiary area **Affected level:** Small due to application of advanced technology in agriculture.
Soil erosion or scouring of streams or canals	Yes	Minor	Negative	Permanent	**Description:** i) Irrigation area has small affected level because of flattened land; ii) After main & primary canals are consolidated by concrete, soil erosion and land slide will not occur; iii) From streams to irrigation area, the gradient is small thus, soil erosion and land slide will not be serious.

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					Location: beneficiary area Affected objects: - Area adjacent to stream and canal in the beneficiary area - Local people in Xuan Phuoc commune **Affected level:** Small
Congested canals cause flooding situation	Yes	Minor	Negative	Permanent	**Description:** In case of improperly operation and regulation of the culvert system, water will cause overflows and broke the canals. In addition, waste, weed growing on the canals can cause reduce water transmission capacity of the canal or congested canal stuck in the canals. **Location:** Along the proposed canals. **Affected objects**: - The subproject canals - Local people in beneficiary area **Affected level:** Small
Risks caused by natural calamity	Yes	Minor	Negative	Permanent	**Description:** 1.Risk of breaking weir and diversion flow due to inundation; Flooding situation always occur on Suoi Cau stream in rainy season; if flooding water level and flow volume exceed the flood design frequency, the weir might be broken; 2. Sediment at upstream of the weir makes water storage volume decrease and affects weir structure. In rainy season, sand and twig float from upstream to the weir foot, affecting the structure and storage capacity of the weir; 3. Sedimentation of canal bed will decrease the water transfering capacity to the cultivation area; **Location:** The subproject area, especially in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlet - Xuan Phuoc commune; **Affected objects:** - Suoi Cau weir and subproject canals;

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					- Local people in the beneficiary area and downstream of Suoi Cun stream. **Affected level:** Small. Direct impacts on canal are small thanks to their positions are in paddy field and they are not directly suffered from stream or dynamic flow damage. Moreover, the subproject design met all safety standards will eliminate the risk of broken weir.
Affecting water quality due to the increased volume of pesticide or chemical used for water treatment or increasing the waste water	Yes	Negative	Minor	Permanent	**Description:** After constructing the canals, the cultivated area will increase by 180 ha. Consequently, the quantity of pesticides or chemical fertilizers will be increased. The amount of pesticides on field surface and drainage system will affect the quality of agricultural land and irrigation water, possibly groundwater. The risk will increase if the management of pesticides is not reasonable. **Location:** Irrigation area in Xuan Phuoc commune. Affected objects: - Water quality in the subproject area - Local people in the subproject area **Affected level:** Small due to application of advanced technology in agriculture and proposed training for local people (IPM)
Affects on employment or livelihood	Yes	Positive	Significant	Permanent	**Description:** Increase incomes and living standards for people in the subproject area by means of increasing the agricultural land area for production, cultivation productivity and diversification plants of seasonal crops. **Location:** The subproject area in Xuan Phuoc commune. Affected objects: Local people in the subproject area **Affected level:** Significant
Impacts on ethnic groups	No				There are no ethnic households living in the subproject area

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
Generating solid and liquid waste	Yes	Negative	Minor	Permanent	**Description:** Agricultural waste after harvested or garbage from other farming activities such as pesticide covers and straw is popular. Currently, waste has not polluted severely to the canal water quality, soil, crops and farming areas. However, in the long-term, it will affect increasingly to soil and water quality and plants if the management authorities do not control and minimize; **Location:** The subproject area in Phu Hoi, Cay Xoai 1, Cay Xoai 2 commune; Affected objects: Canals and farming areas **Affected level:** Small because of proper management method will be applied.
Changing the service approaching ability of local residents thanks to building management road for the work	Yes	Significant	Positive	Permanent	Description: Management road combined with traffic road will increase the approaching ability of local residents to services from markets, areas for commodity and agriculture product exchange. **Location**: Subproject proposed route and the vicinity. **Affected objects**: - Local people in the subproject area - Merchants who do business in the subproject area. **Affected level**: Small due to the proposed route connect the from Suoi Cau weir to the residential area.
Occupying land of canal bank and canal and weir safety corridor for individual purposes	Yes	Negative	Minor	Permanent	**Description:** The occuping land for planting perennial trees or for personal purpose in the right of way (ROW) of the canals and weir corridors are remain. Occupying land for planting perennial trees are violate regulations of the Ministry of Agriculture and Rural Development on protecion corridor canals and makes difficulties in implementing compensation and project execution during upgrading of the work; **Location:** the right of way (ROW) of the corridors of canals and weir of the

IMPACT	POTENTIAL IMPACT				BRIEF DESCRIPTION OF IMPACT LOCATION AND SCALE
	YES/ NO?	IS IT MINOR OR SIGNIFICANT?	IS IT POSITIVE OR NEGATIVE?	IS IT TEMPORARY OR PERMANENT?	
					sub-project in Phu Hoi, Cay Xoai 1, Cay Xoai 2 hamlets - Xuan Phuoc commune. **Affected objects**: - Subproject canals - Local people in beneficiary area. **Affected level:** Small because of Regulations of the Agriculture and Rural Development on protection corridor canals were issued to deal with this issue.

5. OUTLINE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

5.1. Environmental Mitigation Plan

Table 4. Environmental mitigation plan

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Pre-construction stage				
UXO removal	▪ Hiring the authorized mine detector team (proposed team from Phu Yen Military Command) to scan and remove any possible UXO left in the subproject are. ▪ Inform widely UXO removal plan to Xuan Phuoc CPC and people in Xuan Phuoc commune by information board at Xuan Phuoc CPC or broadcast through media system in Dong Xuan district ▪ Install signs and alarms system at the UXO removal area while implement to warns people from entering the area. ▪ Checking the construction site and UXO clearance certificate upon the UXO removal complete.	Phu Yen PPMU	UXO Detector	Included in UXO removal plan (175.000.000 VND)
Environmentally responsible procurement	▪ EMP is included in tender documents to ensure that mitigation measures are budgeted and to prepare the contractors for environmental responsibilities. ▪ Specify in bid document that Contractors shall engage capable and trained staff or site agent(s) to take responsibility for the environmental management and safety issues at the working level and to monitor the effectiveness and review mitigation measures as the sub project proceeds. Contractors recruit qualified staff to oversee implementation of environmental and safety measures specified in the EMP. ▪ Any recent recommendations and initiatives from DONRE or other local environmental authorities will be incorporated in the EMP and updated as necessary.	Design Consultant, PPMU, Contractor, Environmental Consultant		Included in the contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Plan construction materials management	As planed in design documents, the main construction material will be taken from existing mine as: ▪ Filled soil will be taken from Phu Hoi borrow pit which is 500 – 700m far from the site. It is managed by Dong Xuan DPC and Xuan Phuoc CPC. ▪ Stone will be purchased from quarries in Xuan Quang 3 commune which is about 20 km from the site. ▪ Sand and gravel will be bought from licensed mines in Cai river located at a distance of 16 km from the site ▪ Steel, cement will be purchased in Tuy Hoa city ▪ PPMU and contractor need to check the environmental responsibilities of suppliers. ▪ In case that, above material sources will be changed, an appropriate material management plan should include the following: ▪ Required materials, potential sources and estimated quantities available; ▪ Agreement with the local authorities ▪ Check with environmental permission/certification of the quarries to ensure that environmental impacts and mitigation measures have been considered by owners. ▪ Environmental recovery plan ▪ Material transportation manner plans and schedules ▪ Program for delivery of quarry and borrow material	Design Consultant, Phu Yen PPMU		Included in the contract
Plan Spoil and Waste Disposal	▪ Re-use of waste materials & spoil disposal locations included in bid and contract documents. ▪ Select an properly treatment manners, preferred of for fill up the site of other projects activities/purposes ▪ Determine domestic waste disposal locations. The expectation is that construction waste will be stored temporarily along the proposed road, domestic waste will be stored in rubbish bins and then will be collected and transfer to the area as agreed with Xuan Phuoc CPC and contractors will be responsible for paying the bill ▪ Agreement with the local authorities need to be obtain during detail design or before starting construction activities; ▪ Environmental recovery plan since construction activities completed ▪ Waste materials transportation manner plans and schedules ▪ Establishment of complaints management system for duration of the works	Design Consultant, Phu Yen PPMU		Included in the contract

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Effects on households from loss of residential or agricultural land	Implement mitigation measures outlined in the subproject Resettlement Plan	PPMU		Included in resettlement report
Construction stage				
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	▪ Operation license of Phu Hoi borrow pit must be obtained before exploiting construction materials. The operations licenses will include approved environmental certificate. Hence, dust and noise generated by exploitation activities will be minimized. ▪ Check the environmental permission/ certification of other mines to ensure that environmental impacts and mitigation measures have been considered by owners. ▪ When transporting construction materials, canvas must be used to cover to avoid dust. ▪ Construction equipment and machines must be in good condition and be maintained regularly.	Contractor		No marginal cost No marginal cost No marginal cost
Erosion or sedimentation caused during clearing or earthworks	▪ Construct in section and completed each section before move to the next one to minimize area of land clearance and duration of works within the area; ▪ Restoration of areas cleared for the construction site of each section before move to the next section; ▪ Replant vegetation cover after construction activity finishes. ▪ Avoid clearing activities during the rainy season from September to December	Contractor	Sediment fences, traps.	No marginal cost
Impacts arising from temporary storage areas including dust, noise and water quality	▪ Store material in impervious ground and cover with canvas; ▪ Reasonably arrange the locations for materials gathering and gather materials neatly along the proposed road and the 4km canal and far from residential area. ▪ Avoid store material along the section of the proposed road which is going through Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. In case of unavoidable, the contractor should concentrate to work in this section and remove the material storage site as soon as possible. ▪ Material transportation is strictly forbidden in the evening due to storage areas are located next to residential areas; ▪ Drainage ditches within the storage area should be controlled and properly transport unused material to disposal sites near the construction sites.	Contractor		No marginal cost

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils	▪ Store chemicals in secure area, with concrete floor and weatherproof roof and away from watercourses and floodplains; ▪ Ensure construction equipment and vehicles are maintained in good conditions to avoid leakage; ▪ Provide rubbish bins and containers at camping sites and construction sites. ▪ Collect debris, sludge at the construction sites and transport waste regularly from the sites to the disposal sites ▪ Install sanitary toilets with septic tanks following sanitation regulation and washing facilities at construction camps. ▪ Avoid directing discharges from concrete mixing equipment to to Suoi Cau and the canal	Contractor	Tanks for storing chemicals, sanitary toilets, rubbish bins and containers	Included in the contract
Dust or exhaust from construction equipment	▪ Machines and devices should be provided with registration certificates on technical safety and environmental protection in accordance with Decision No. 35/2005/QD-BGTVT ▪ When transporting construction materials, implement strictly dust suppression measures such as watering of exposed surfaces and covering the trucks with canvas; ▪ Set speed limit (less than 40km/h) for transportation vehicles while travelling through Xuan Phuoc commune's road especially at the Xuan Phuoc Primary School. ▪ Ensure that all construction vehicles and equipment are well maintained;	Contractor	Canvas, washing facilities	Included in the contract
Noise is generated from construction equipment	▪ Ensure that all construction vehicles and equipment are well maintained; ▪ Consult Xuan Phuoc CPC for a suitable construction plan and material transportation route. ▪ Consult the teacher in Xuan Phuoc Primary School for a suitable construction and material transportation time. ▪ Reasonably coordinate the number of transportation vehicles, transportation time and set speed limit below 40 km/h when crossing Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. ▪ Avoid constructing at the rest hours of local people (from 7pm to 7am next day); ▪ Inform Xuan Phuoc CPC and local people in the subproject area about schedule and duration of construction works. Collect feedbacks from the community through head of hamlets and CPC.	Contractor District/Town Support Team, CPC, DPC		Included in the contract with contractors

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Impact on traffic or conditions for property access	▪ Install signal lamps and sign panels at T-junction between Xuan Phuoc commune's road and road No. 642 and at the position of Xuan Phuoc Primary School. Limit the speed of means of transport on the route especially in Xuan Phuoc commune's road (below 40 km/h); ▪ When it is necessary, build bypass roads to facilitate people's traveling; ▪ Notify Xuan Phuoc CPC and local communities of Phu Hoi, Cay Xoai 1 and Cay Xoai 2 on the schedule and duration of construction.	Contractor Contractor Contractor		Included in the contract with contractors
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	▪ Inform local authorities in advance about the construction and material transportation schedule. Place information about the subproject in Xuan Phuoc CPC and other public offices in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets; ▪ Minimize using heavy trucks for transporting materials in wet weather to avoid accidents from crashing into houses or works at road edge due to slippery roads; ▪ Contractors must repair material transportation roads if they damage them. ▪ Comply traffic regulations (limit the velocity of trucks – below 40 km/h when travelling in Xuan Phuoc commune's road); ▪ Install warning signs at junctions and Xuan Phuoc Primary School, Xuan Phuoc CPC.	PPMU Contractor Contractor Contractor Contractor		Included in the contract with contractors
Construction workers cause social disruption	▪ Consult with Xuan Phuoc CPC to arrange accommodation for workers (to avoid any negative impacts on local people's activities) and register temporary residence card for them; ▪ Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions; ▪ Raise workers' awareness of environmental sanitation, infectious diseases as well as prevention of HIV/AIDS and sexually transmitted diseases and dissemination on social evils like drugs, gambling, prostitution, violence, stealing, etc.	Contractor		Included in the contract with contractors
Generation of excess spoil	▪ Gather all excess spoil in a place with impervious ground and far from residential area ▪ Regularly transfer the spoil to designated dumping site in Xuan Phuoc commune. ▪ Transportation truck must covered with canvas and ensure no spoil spill during transportation.	Contractor		Included in the contract with contractors

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Risk to health and safety to local people or construction workers	▪ Provide workers with safety equipment as masks, safety boots, helmets, gloves, protection clothes... and remind them to use while working. Workers working in high noise area (compaction, excavation…) should be equipped with ear protectors. ▪ Equip first-aid kits, suitable fire extinguishers in worker camps and fuel storage sites. ▪ Raise workers' awareness on working safety by training them before construction commencement. ▪ Set up restriction signs on the construction site; warning signs, barriers in areas prone to insecurity such as deep holes/pits, narrow sections etc	Contractor	Safety equipment, medical cabinet, fire extinguisher	Included in the contract with contractors
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	▪ Provide rubbish bins (02 bins at the main camp; 01 bin for each camp along the canal sides and its management road and request workers to collect waste and not to leave litter into any water resources such the canal and Suoi Cau weir area; ▪ Provide containers to collect construction waste and hazardous waste such as used oil at construction sites. ▪ Collect solid waste regularly and transport it to the designated disposal site in Xuan Phuoc commune.	Contractor	Rubbish bins and containers	Included in the contract with contractors

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Impacts on irrigation activities	▪ Construction of the Suoi Cau weir and upgrading canals should avoid winter-spring crop time to minimize the impact on the main crop of local people. ▪ The Contractor should coordinate with irrigation authority, commune's irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done); ▪ Commune's irrigation staff, irrigation exploitation enterprise or relevant authorities should early inform households and contractor on water supply schedule so that they can make plan on their own initiative; ▪ PPMU and the Contractor should pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to stop of water supply at cultivation area, etc ▪ Proposed construction time for upgrading primary canals: after harvesting: 1 June 2016 to 31 December 2016. Construction solution is construction time should be implemented at the time when irrigation activities are not done following stop of water supply alternatively, irrigation time: 10 days, stop of water supply: 15 days	PPMU/ Contractor; Dong Cam Irrigation One Member Limited Company, Xuan Phuoc CPC and local residents in the subproject area		Included in the contact with the contractor
Impacts due to inappropriate enivronmental recovery responsibility	▪ Remove all of the construction machines and construction tools out of the construction sites upon construction complete. ▪ Perform industrial clean in all construction sites and temporary acquired land areas upon the construction complete and before hand over them back. ▪ Compensate adequately for the temporary acquired land area that could not be recovered ▪ Plant tree to recover the vegetation coverage. ▪ Taking photos of the clearance site before clearance and after recovery process complete to ensure the vegetation coverate has been recovered adequately.	Phu Yen PPMU/ Contractor;		Included in the contact with the contractor
Operation stage				
Reduce nutrition in the soil due to over-irrigation	Coordinate with agriculture authority/ Agricultural extension units to ensure that farmers are trained on proper irrigation method;	DARD of Phu Yen province		Provincial budget

POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	TREATMENT FACILITIES	COST
Soil erosion or scouring of streams or canals	▪ Regularly implement monitoring and cleaning at congested canals; ▪ Coordinate with agriculture promotion center to ensure that farmers are trained on cultivation method at slope land area.	Phu Yen PPMU Dong Cam Irrigation One Member Limited Company		Provincial budget
Congested canals cause flooding situation	▪ Operate regulation works canal properly, flexibly with real condition to avoid waste and water overflow at the proposed canals; ▪ Periodically dredge irrigation canal system after harvesting crop, heavy rain and flood; ▪ Periodically inspect and maintain canals and on canal structures.	Dong Cam Irrigation One Member Limited Company		Provincial budget
Risks caused by natural calamity	▪ Ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity; ▪ Periodically implement dredging and collecting rubbish in weir's reservoir at upstream; ▪ Irrigation works exploitation & management enterprise need repairs and maintenance to ensure the works periodically to ensure effective operation of irrigation works;	Phu Yen PPMU Dong Cam Irrigation One Member Limited Company		No marginal cost Provincial budget
Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water	▪ Coordinate with agriculture authority to ensure that farmers are trained on irrigation method; ▪ Solid waste from pesticide, insecticide as well as other substance such as herbicide should be stored in safety tanks at cultivation area before transport to dumping area; ▪ Ensure weed and other floating waste are periodically cleaned along the canals; ▪ Coordinate with Agriculture Extension Center to ensure that farmers are trained on Insect Prevention Method (IPM).	Dong Cam Irrigation One Member Limited Company / DARD/ Agriculture Extension Centre		Provincial budget and other assistance funds
Generated solid and liquid waste	▪ Periodically collect waste in canals and field surface; ▪ Build waste collection system; ▪ Improve the awareness of local people of waste management and collection in the field, canals via training courses.	Dong Cam Irrigation One Member Limited Company / DARD		Provincial budget
Occupation of canal, weir and canal safety corridor for individual purposes	▪ Implement strict management measures to protect the canal banks, weir and reservoir protection area from being reoccupied (for tree planting and other encroachment) by regular check and establishment of regulations on treatment of violations (if any)	Dong Cam Irrigation One Member Limited Company		Provincial budget

5.2. Environmental Monitoring Plan

5.2.1. Environmental effects monitoring

Environmental effects monitoring is carried out to examine impacts of project in relation to ambient environmental conditions.

Table 5. Environmental effects monitoring plan

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction stage						
Minimization of noise generation	Noise level	At nearest residential areas of the management road and the proposed canals and residential areas near material transportation roads in Phu Hoi, Cay Xoai 1, Cay Xoai 2 – Xuan Phuoc commune.	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team	Included in separated contract with CPMU
Minimization of dust generation	Dust concentration	The same monitoring locations of Noise	Observation and community consultation	Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Every 6 months during construction period or when community's feedback is raised	Monitoring consultant on environmental safeguard policies of LIC team	Included in separated contract with CPMU
Control of surface water quality	Sedimentation, rubbish, lubricating oil and solid waste BOD, DO, pH, TSS, Total coliform; fecal coliform, lubricating oil	At downstream of Suoi Cau weir At the intersection point between the proposed canal route and existing earth canal route .	Visual Observation; Sampling and analysis	Weekly and after large rain events	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Based on requirement of water supply	Local people, Community monitoring committee Local irrigation staff (commune)	Province budget Without marginal cost

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
				Once every 6 months during construction or in case of at any time or in case of complaints of residents	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
Labor safety and community safety	Number, use of labor equipment; signal system Obey for traffic law of transportation mean of construction material	In construction sites and On proposed route; material transportation roads along residential areas of Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets – Xuan Phuoc commune	Observation and community consultation	Weekly or when community's feedback is raised	Local people, Community monitoring committee	Without marginal cost
				Weekly or when community's feedback is raised	Construction Supervision Consultant (CSC)/ hold Environmental Supervision Consultant	Included in the contract with PPMU
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
Operation stage						
Surface water quality	BOD, DO, pH, TSS, Total coliform; fecal coliform, turbidity	Location: At 05 points: the reservoir of Suoi Cau, the beginning and end of the proposed right main canal and left main canal	Observation and community consultation Or sampling methods following Vietnamese standard when receiving feedback from communities	Twice a year in two first years of operation (1 time in rainy season and 1 time in dry season)	DARD, Dong Cam Irrigation One Member Limited Company	Included in operation cost of operation unit
Waste management	Conditions on environmental sanitation within the subproject area; temporary waste storage yard	Throughout the subproject area	Observation and community consultation	Once every 6 months in first 2 years of operation	Dong Cam Irrigation One Member Limited Company	Budget provided following regulations at Decree No. 115

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Periodical canal maintenance	Level of canal sedimentation and conditions of sluices, equipment and works on the main canal	Along the proposed canals	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Dong Cam Irrigation One Member Limited Company	Local budget
Re-occupation of canal and weir corridor	Occupation area, type of occupation (for planting trees or other purposes)	Along the proposed canals and weir	Field survey, community consultation	Once every 6 months in first 2 years of operation	DARD/ Dong Cam Irrigation One Member Limited Company	Local budget

5.2.2. Environmental Compliance Monitoring

Environmental compliance monitoring is carried out to test compliance with operating procedures, technical standards and/or contractor specifications in the EMP.

Table 6. Environmental Compliance Monitoring

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Pre - construction Stage						
Environmentally responsible procurement	Inclusion in bid docs	N/A	Checking documents	Bid preparation, before start of civil works	PPMU	Project preparation
Plan construction materials management	Meeting minutes and agreement with local authorities	N/A	Checking documents	Prior to start of site works and throughout construction phase	PPMU	Project preparation
Plan spoil and waste disposal	Meeting minutes and agreement with local authorities	N/A	Checking documents	Prior to start of site works and throughout construction phase	PPMU	Project preparation
UXO removal	UXO clearance process and certification	Throughout the construction site	Checking documents/ Observations	During UXO removal process and before the commencement of the construction	PPMU	Project preparation

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
Construction Stage						
Dust, noise, water quality at borrow pit in Phu Hoi hamlet and mines	Operation license for the borrow pit; Noise and exhaust generation; covering of trucks; oil/fuel leaks	At the borrow pit and other mines	Checking documents/ Observation	Prior to start of material exploitation at the mines	PPMU	Project preparation
				Weekly	Construction Supervision Consultant	Included in the contract signed with CSC
Erosion and sediment controls	Condition and capacity of controls	Throughout construction sites	Observation	Weekly and After heavy rain	Construction Supervision Consultant	Included in the contract signed with Construction Supervision Consultant and Loan Implementation Consultant Team (LIC)
				Every six months	Environmental Specialist of LIC Team	
Materials storage	Condition of materials storage areas	Throughout construction sites	Observation	Weekly	Construction Supervision Consultant	Included in the contract signed with Construction Supervision Consultant and Loan Implementation Consultant Team (LIC)
				Every six months	Environmental Specialist of LIC Team	
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leaks	Throughout construction sites	Observation	Weekly	Construction Supervision Consultant	Included in the contract signed with Construction Supervision Consultant and Loan Implementation Consultant Team (LIC)
				Every six months	Environmental Specialist of LIC Team	
Pollution of waterways, aquatic environments	Condition of construction machines; suitable fuel storage site; hygiene toilets	Throughout construction sites; construction camps and material transportation route	Observation	Weekly	Construction Supervision Consultant	Included in the contract signed with Construction Supervision Consultant and Loan Implementation Consultant Team (LIC)
				Every six months	Environmental Specialist of LIC Team	
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation	Weekly	Construction Supervision Consultant	Included in the contract signed with Construction Supervision
				Every six months	Environmental Specialist of	

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
					LIC Team	Consultant and Loan Implementation Consultant Team (LIC)
Risks to health and safety of local people and construction workers	Check implementation of all items. Check compliance to Labor Code of Vietnam and other relevant regulations	Throughout construction sites	Checking documents, observation and community consultation	Weekly	Construction Supervision Consultant	Included in the contract signed with CSC and LIC
				Every six months	Environmental Specialist of LIC Team	
Property access	Rehabilitate the possibility of temporary and fixed access	Affected assets: proposed route and material transportation roads and affected assets during construction	Observation and community consultation	Once during construction works and once after finishing construction	Construction Supervision Consultant Local Community Monitoring Boards	Included in the Contracts signed with Construction Supervision and Loan Implementation Consultant Team (LIC) Local budget
				Every six months	Environmental Specialist of LIC Team	
Areas of standing water	Pond or undrain water	Throughout construction site	Observation and community consultation	Weekly during rainy season	Construction Supervision Consultant Local Community Monitoring Boards	Included in the Contracts signed with Construction Supervision Consultant Local budget
				Once every 6 months during construction or in case of at any time if necessary	Monitoring consultant on environmental safeguard policies/LIC	Included in separated contract with CPMU
Waste disposal	Environmental sanitation at construction site and temporary waste storage area	Throughout construction site	Observation	Weekly	Construction Supervision Consultant	Included in the contract signed with Construction Supervision Consultant and Loan Implementation Consultant Team (LIC)
				Every six months	Environmental Specialist of LIC Team	
Site	Condition of	At all	Observation	Weekly or	CSC/Phu Yen	Included in the

Mitigation Measure	Parameters	Location	Methods	Frequency	Responsibility	Cost
clearance and environmental recovery	construction sites, temporary borrow areas after construction complete	construction site Phu Hoi borrow pit	and community consultation	when community's feedback is raised	PPMU/ Community supervision	contract No marginal cost
Operation Stage						
Waste management	Site cleanliness and conditions of temporary waste storage areas; recent waste disposal method	Throughout sub-project area	Observation	6 monthly for first 5 years of operation	Dong Cam Irrigation One Member Limited Company	Provincial budget
Using irrigation water	Using matter	Households near canals	Observation and community consultation	Once every 6 months in first 5 years of operation	Phu Yen PPMU/ Dong Cam Irrigation One Member Limited Company	Budget provided following regulations at Decree No. 115
Soil erosion or land slide in canal	Conditions of the canal; level of sludge in water	At sections which have not be rehabilitated	Observation	Once every 6 months in first 2 years of operation	Phu Yen PPMU/ Dong Cam Irrigation One Member Limited Company	Budget provided following regulations at Decree No. 115
Prevention of soil erosion and land slide in the canal	Conditions of canal bank	At some representative locations in subproject area	Observation and community consultation	Once every 6 months in first 5 years of operation	Phu Yen PPMU/ Dong Cam Irrigation One Member Limited Company	Budget provided following regulations at Decree No. 115

5.3. EMP Implementation Arrangements

Table 7. EMP Implementation

Organization	Roles and Responsibilities		
	Subproject Preparation	**Subproject Implementation**	**Subproject Operation**
CPMU	Advice to PPMU Safeguards Officer on IEE/EPP and IEE/EIAR preparation Review and provide "no-objection" on IEE/EPPs or IEE/EIARs submitted by PPMUs	Suggest to PPMU Safeguards Officer on EMP implementation during construction Monitor progress during construction Consolidate environmental reporting from PPMU	Advice to PPMU Safeguards Officer on EMP implementation during first 2 years of operation Monitor progress during first year of operation Consolidate PPMU environmental reporting
PPC	Sign-off on environmental assessment documents prior to submission for approval Approval of any subprojects requiring EIAR that are not subject to MONRE approval	Project owner with ultimate responsibility for environmental performance of subproject during construction	Project owner with responsibility for operation stage environmental performance including implementation of EMP during operation
DONRE	Provide advice and guidance on environmental issues as required during subproject preparation	Monitoring implementation of EMP through their own internal monitoring system	Monitoring implementation of EMP through their own internal monitoring system
Phu Yen PPMU	Engage consultant and have overall responsibility for IEE/EPP or IEE/EIAR preparation and submission for approval Ensure staff are adequately trained in environmental issues	Responsibility for EMP implementation during pre-construction and construction Ensure that contract specifications and bud documents include environmental requirements Undertake inspections and monitoring of environmental issues during construction Coordinate environmental monitoring reporting to CPMU	Responsibility for EMP implementation during first year of operation Undertake inspections and monitoring of environmental issues during first year of operation Assist project owners to incorporate environmental requirements into infrastructure O&M procedures
District PC	Approval of subproject EPPs in accordance with GOV legislative requirements	Monitoring implementation of EMP through their own internal monitoring system	Monitoring implementation of EMP through their own internal monitoring system
District Subproject Support	Assist in IEE/EPP preparation as required Assist PPMU to review bidding	Day to day supervision of contractors' in district including compliance with	Undertake environmental monitoring and

Organization	Roles and Responsibilities		
	Subproject Preparation	**Subproject Implementation**	**Subproject Operation**
Teams (SST)	documents, contract documents, and tenders to ensure environmental issues are adequately addressed	environmental management requirements Undertake environmental monitoring and coordination of local community environmental monitoring activities	coordination of local community environmental monitoring activities for first year of operation
Commune Supervision Board (CSB) and local community members[6]	Involvement in consultation and participation activities to identify and develop subprojects Ability to comment on environmental assessment documentation upon disclosure	Involvement in environmental monitoring activities under the direction of SST	Involvement in environmental monitoring activities under the direction of SST
Construction contractor	n/a	Prepare detailed Site EMP to meet the Subproject EMP general requirements Allocate adequate resources to meet the requirements and obligations of Site EMP	n/a
Operation unit	N/a	N/a	Monitoring mitigation measure in the operation phase
LIC Team on environmental safeguard policies	N/a	Implement spot check environmental monitoring at subproject area once every 6 months. Monitoring results will be included in the report which will be sent to CPMU.	N/a
Construction Supervision Consultant	N/a	Implement construction supervision at construction sites every day. Implement environmental monitoring at subproject area every week. Monitoring results will be included in the report which will be sent to PPMU.	N/a

[6] CSBs have been established under Decree 80 Regulation for Participatory Investment Supervision. Article 8 of Decree 80 provides the community with opportunities to inspect compliance, monitor implementation and evaluate the results of investments in the commune, including environmental impacts.

5.4. Monitoring and Reporting System

Table 8. Monitoring and Reporting System

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
Construction	**Site Environmental Performance Report** indicating compliance with EMP and monitoring results	Monthly	Construction Supervision Consultant	PPMU
	EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Quarterly	PPMU	CPMU
	EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Bi-annually or twice during construction depending on construction duration	CPMU	ADB
	Subproject Environmental Report indicating overall subproject environmental performance and EMP compliance	At completion of subproject	CPMU	ADB
Operation	**EMP Compliance Report: Operation** indicating compliance with subproject EMP commitments during operation	Every six months for first two years of operation. Ongoing frequency to be determined based on review after 2 years	Dong Cam Irrigation One Member Limited Company	ADB and Town and District People's Committee

EMP Budget

Table 9. EMP Budget

Item	Marginal Costs for Pre-Construction	Marginal Costs for Construction	Marginal Costs for Operation	Marginal Costs Sub-Total
Mitigation				
Compensation and land clearance	In a separated item on project compensation and resettlement	No	No	Included in other items
Monitoring				
PPMU's Internal monitoring	Included in management cost of PPMU	Included in the Contracts with the Contractor and CMC as well as in PPMU's management cost	Local and provincial budget	Included in contracts or other operation capital sources
Community monitoring	Not available (n/a)	Local budget (as in Decision No.80/2005/QD-TTg)	Local budget (as in Decision 80/2005/QD-TTg)	Local budget

Item	Marginal Costs for Pre-Construction	Marginal Costs for Construction	Marginal Costs for Operation	Marginal Costs Sub-Total
Independent monitoring consultant on environmental safeguard policies	n/a	Included in a separate contract with CPMU	n/a	
Training on capacity enhancement on environmental monitoring capability	n/a		Local budget	n/a
Public disclosure	Defined in consultancy contract on IEE		n/a	Public disclosure
TOTAL				

6. PUBLIC CONSULTATION AND DISCLOSURE ACTIVITIES

6.1. Description of Activities to Date

Table 10. Public consultation and public disclosure activities

CONSULTATION METHOD	DETAILS OF ACTIVITIES	
Correspondence and meetings with local authorities (District and Commune PCs, Commune Fatherland Front, Women's Union, Youth Union and others)	Date of correspondence	05 /05/ 2014
	Dates of meetings (if requested)	12/05/2014
	Minutes of meeting attached (Yes / No)	Yes
Public meetings	Date(s) held	12/05/2014
	Location(s) held	PC's meeting hall and cultural house of Xuan Phuoc commune
	Invitees	Commune PCs, stakeholders, village heads, Young Communist League, Fatherland front, Farmer Association, Women Union of the communes.
	Methods of invitation	Radio announcement and letter, coordinate with Women Union to mobilize women's participation in meetings
	Agenda attached (Yes / No)	Yes
	Minutes of meeting attached (Yes / No)	Yes
	Number of participants	Total have 41 people Man: 28 people Women: 13 people (the list of participants will be closed in the minutes of consultation)

6.2. Outcomes of Public Consultation to Date

Table 11. Results of public consultation

Description of Issue Raised	By Whom?	Required Follow-up Actions?
Detailed design	Local people of Xuan Phuoc commune	In the surveying and detailed design period, the consulting firm is expected to coordinate with local authorities to find suitable water outlets to avoid flooding in the area near the airport
Restoration of construction site	Local people of Xuan Phuoc commune	It is desired that the sites will be restored after completing the construction
Traffic disturb when transporting material on road 642 and commune's roads	Local people	Do not transport materials at rush hours (6 am to 7 am; 11 am -12 pm; 5 pm- 6pm)
Traffic safety on road 642 and commune's roads	Local people	The Contractors are supposed to slow down when transporting materials by the residential area along road 642 and commune's roads. It is necessary to plant construction signposts and speed limit signs
Construction workers cause social disruption and sanitation problems	Local people	It is requested that the workers maintain sanitation and public order; Register temporary residence card for workers; Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions.
Dust from construction equipment	Local people	When transporting construction materials, implement strictly dust suppression measures such as watering of exposed surfaces and covering the trucks with canvas;

6.3. Future Public Consultation Activities

Table 12. Proposed community consultation activities

Activity	Participants	Expected Outcomes	Schedule	Cost Estimate
Kick-off meeting prior to construction commencement	PPMU, the Contractor, Construction Supervision Consultant, community representatives at project area	Publicize construction contents, schedule and plan for water supply	1 week prior to construction commencement	Be estimated in EMP budget
Periodical meetings	Contractor, Construction	Periodically check mitigation activities	Once every month from construction	Included in contract signed

Activity	Participants	Expected Outcomes	Schedule	Cost Estimate
	Supervision Consultant and representatives of local authority, organizations and community at project area	and arising problems Propose treatment alternatives and reach agreement on implementation	commencement	with parties

7. CONCLUSION AND RECOMMENDATIONS

The subproject "Upgrading Suoi Cau weir and access road" will be implemented by Phu Yen PPMU under IRDPCP in Dong Xuan district, Phu Yen province.

An environmental assessment of the project has been carried and the main negative potential environmental impacts of the sub-project during construction and operation stages include:

- Air pollution from dust or exhaust emissions (CO, NOx, SOx, etc). Noise, vibration from construction equipments and transportation vehicles on the road;
- Dust and noise generated during the transport of material from material stores to the construction sites;
- Traffic disturb when transporting material, effect on infrastructure system (electricity, road, communication cables), risks of health and safety of local people and construction workers
- Dust and erosion from Phu Hoi borrow pit, temporary material storages create air pollution and water pollution in the area;
- Waste disposal problems from solid waste generated during construction activities or municipal wastes generated in construction camps; Agriculture wastes (residue of vegetables, pesticide cover, straw of cultivation area) from the boundaries of the upgraded main & primary canal have been focus at the canal bed, obstructing and polluting the flow;
- Affecting water quality due to the increased quantity of fertilizer or pesticide or chemical substances or waste water;
- Risks of natural calamity due to Storm & flood occur during rainy season.

A range of mitigation and monitoring measures has been developed for the sub-project, which includes the following activities:

- Measures for mitigating air pollution: During the transport of construction materials, watering the road surface and covering means of transport with canvas. Regularly maintaining vehicles and machines.
- The Contractors should not transport materials at the rest hour of local people (from 7 pm to 7 am in the next day) and to be supposed to slow down when transporting materials in the residential area of Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets and to plan install signposts and speed limit signs.
- Located temporary storage sites on impervious ground and cover with canvas. Avoid store material near the residential area, especially Xuan Phuoc Primary School.
- Provide rubbish bins to store domestic waste at the construction site; request workers not to leave litter; provide containers to store construction waste at construction sites; install sediment fences and/or sediment traps to collect sediment before it enters waterways;
- The Contractor should coordinate with irrigation, commune's irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done)
- During exploitation process, management authority should disseminate and consult the local authority/water users to limit the excessive use of water; establish regulated procedures and detailed water supply plan; update information year by year to inform users, implement dissemination and training on scientific irrigation to the community for understanding and implementation,

- Avoid deteriorating soil/water quality by increasing quantity of fertilizer and pesticide Phu Yen PPMU should cordinate with Agriculture Extension Centre to ensure that farmers are trained on Integrated Pesticide Management (IPM)
- PPMU should ensure that subproject design will meet all safety standards on prevention of flooding, storms and other potential natural calamity

To ensure the compliance of the mitigation activities, following monitoring measures should be implemented

In order to ensure the compliance of measures to mitigate negative environmental impacts caused by the subproject, these monitoring activities must be carried out:

- The contractor must implement measures to mitigate environmental impacts in residential areas near the construction sites, along the material transportation roads and construction sites, worker's camps etc... Their implementation can be monitored by observing and measuring water quality, air quality and frequency of implementing these measures. Moreover, the contractor must arrange adequate resources to meet general requirements and compulsory regulations on EMP at the construction sites;
- During operation stage, O&M agency have to periodically manage water quality according to recent Vietnamese Standards and National Technical Regulations;
- PPMU should intensify the contractor's compliance with environmental regulations on material storage, construction equipment, waste disposal, air quality, dust, noise and vibration to ensure safety for the community during construction stage and operation stage; coordinate with local authorities to formulate and implement EMP.

Conclusion:

The upgrading Suoi Cau weir and access road will supply irrigation water for 180 ha of agriculture land and improve livelihoods and reduce poverty for local people in the subproject area. It is expected to directly benefit 10,852 people in Xuan Phuoc commune. Thus, the subproject will contribute to promote socio-economic development and modernize rural area;

Negative environment impacts caused by the subproject mainly generate during the construction stage. However, these impacts are temporary and they will end when the canals and the road are put into operation. Upon completion, the proposed weir and canals will help supply irrigation water to farmers. On the other hand, they will bring positive impacts to the environment and promote economic development for the subproject area. Thus, based on the Initial Environmental Examination, the consultants and Phu Yen PPMU would like to recommend as follows:

(i) There will not be any significant impacts to the environment and no further environment assessment is necessary.

(ii) The IEE of the subproject "upgrading Suoi Cau weir and access road" should be approved by authorities so that next steps can be implemented to ensure good progress and project benefits.

8. ANNEXES

- Photos of locations of air quality monitoring
- Public consultation and meeting minutes
- Photos of implementation of public consultation
- Data source
- Environmental monitoring forms
- Environmental Criteria in Bidding Document for Construction Contractor

- Environmental mitigation measure to include into bid documents of the subproject "Upgrading Suoi Cau weir and access road"

Annex 1: Photos of locations of air and water quality monitoring and other photos

Photo 1: Air quality observation location at the management road – Phu Hoi hamlet – Xuan Phuoc commune

Photo 2: Water quality monitoring location at the proposed weir of Suoi Cau

Photo 3: The existing management road – Xuan Phuoc commune

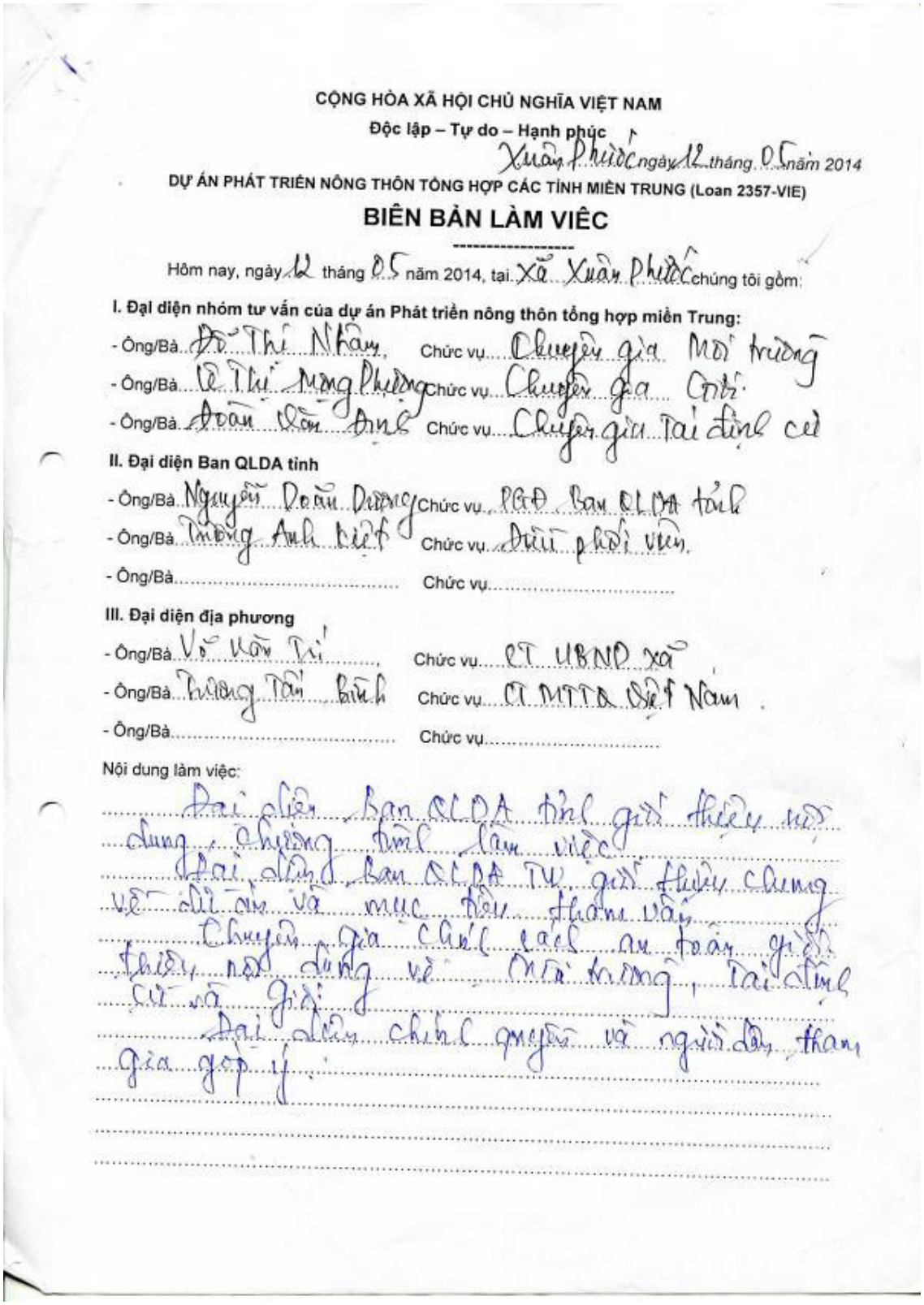
Photo 4: Air quality observation location at the management road – Cay Xoai hamlet – Xuan Phuoc commune

Photo 5: The field near the proposed weir

Photo 6: A dug well of a household in Phu Hoi hamlet - Xuan Phuoc commune

Annex 2: Public consultation and meeting minutes

Meeting minutes at public consultation and lists of attendance in the public consultation meeting at Xuan Phuoc commune



CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Xuân Phước ngày 12 tháng 05 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG (Loan 2357-VIE)

BIÊN BẢN LÀM VIỆC

Hôm nay, ngày 12 tháng 05 năm 2014, tại xã Xuân Phước chúng tôi gồm:

I. Đại diện nhóm tư vấn của dự án Phát triển nông thôn tổng hợp miền Trung:

- Ông/Bà Đỗ Thị Nhàn, Chức vụ Chuyên gia Môi trường
- Ông/Bà Lê Thị Mộng Phương Chức vụ Chuyên gia Giới
- Ông/Bà Đoàn Văn Anh Chức vụ Chuyên gia Tái định cư

II. Đại diện Ban QLDA tỉnh

- Ông/Bà Nguyễn Doãn Dương Chức vụ PGĐ Ban QLDA tỉnh
- Ông/Bà Trương Anh Việt Chức vụ Điều phối viên
- Ông/Bà..... Chức vụ.....

III. Đại diện địa phương

- Ông/Bà Võ Văn Trí, Chức vụ PT UBND xã
- Ông/Bà Trương Tấn Bình Chức vụ CT MTTQ Việt Nam
- Ông/Bà..... Chức vụ.....

Nội dung làm việc:

Đại diện Ban QLDA tỉnh giới thiệu nội dung, chương trình làm việc

Đại diện Ban QLDA TW giới thiệu chung về dự án và mục tiêu tháng vấn

Chuyên gia Môi trường, An toàn giới thiệu nội dung về Môi trường, Tái định cư và giới

Đại diện chính quyền và người dân tham gia góp ý:

Sau khi đọc lại biên bản, những người có mặt đồng ý về nội dung biên bản, không có ý kiến gì khác.

Đại diện Ban QLDA tỉnh

GIÁM ĐỐC

Ngô Đình Thiện

Đại diện UBND xã

Vũ Văn Trí

Đại diện tư vấn

Đoàn Văn Anh

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc!

Xuân Phước, ngày 12 tháng 05 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP

CÁC TỈNH MIỀN TRUNG - KHOẢN VAY BỔ SUNG

BIÊN BẢN HỌP THAM VẤN CỘNG ĐỒNG

Về các chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

Tên tiểu dự án: Nâng cấp đập dâng Suối Cấu và đường giao thông

Xã Xuân Phước, huyện Đồng Xuân, tỉnh Phú Yên

I. Thành phần tham dự:

- Ông/Bà Nguyễn Doãn Dương Chức vụ PCD ban QLDA tỉnh
- Ông/Bà Trương Anh Kiệt Chức vụ Điều phối viên
- Ông/Bà Lê Thị Dung Phương Chức vụ Chuyên gia Giới
- Ông/Bà Vũ Hoàng Lân Chức vụ Chuyên gia Môi trường
- Ông/Bà Đoàn Văn Dinh Chức vụ Chuyên gia Tái định cư
- Ông/Bà Võ Văn Thi, Chức vụ CT UBND xã
- Ông/Bà Trương Tấn Bình Chức vụ CT MTTQ xã

- Đại diện những hộ bị ảnh hưởng ..... người, trong đó .....nữ, chiếm....(%) , Dân tộc thiểu số.....người, chiếm....%

II. Nội dung

2.1 Các nội dung phổ biến:

- Cung cấp các thông tin về dự án như địa điểm, quy mô, các thông số kỹ thuật cơ bản ....

- Chính sách an toàn của dự án bao gồm: Chính sách về giới và sự tham gia của cộng đồng; Kế hoạch hành động giới; Chính sách môi trường, Chính sách Tái định cư và kế hoạch phát triển người dân tộc thiểu số.

2.2 Tham vấn cộng đồng:

- Tham vấn các vấn đề giám sát và tham gia của cộng đồng trong các giai đoạn chuẩn bị, thực hiện, vận hành tiểu dự án, các vấn đề về giới và lồng ghép giới, nhóm dễ tổn thương, hộ bị ảnh hưởng nặng...

- Tham vấn các vấn đề về môi trường, tác động môi trường tiềm năng của dự án bao gồm tác động lên môi trường tự nhiên và xã hội của khu vực dự án và những biện pháp giảm thiểu các tác động tiêu cực;

- Tham vấn các vấn đề về tái định cư, các tác động dự kiến, quyền lợi của người bị ảnh hưởng, các biện pháp giảm thiểu tối đa nhằm có ít tác động nhất đến người bị ảnh hưởng.

- Tham vấn nhu cầu đào tạo của các hộ bị ảnh hưởng.

III. Ý kiến thảo luận

III.1.Các vấn đề về giới, tham gia cộng đồng

Phụ nữ đảm nhiệm 90% công việc gia đình và cộng đồng vì đó là công việc của phụ nữ.

Trong sản xuất, phụ nữ có vai trò như nam giới. Tuy nhiên, trong các lớp tập huấn, nam giới được tham gia nhiều hơn và chủ hộ gia đình giữ vai trò chính trong quyết định các công việc gia đình.

Phụ nữ muốn tham gia nhiều hơn trong ban giám sát cộng đồng.

III. 2. Các vấn đề về môi trường

Các hộ dân mong muốn có nước sạch cho sinh hoạt.

- Nhà thầu cần nghiêm chỉnh chấp hành các biện pháp giảm nhẹ bụi và ô nhiễm nguồn nước trong giai đoạn thi công.

- Trước khi thi công, nhà thầu cần thông báo cho các hộ dân kế hoạch để hạn chế thấp nhất những ảnh hưởng.

III.3. Các vấn đề về tái định cư và dân tộc thiểu số

Qua thực tế cho thấy, việc tiến hành dự án chỉ ảnh hưởng một phần diện tích đất nông nghiệp và cây cối của người dân.

Các hộ dân kiến nghị quá trình tiến hành dự án cần thực thi theo những quy định liên quan, nhằm đảm bảo quyền lợi cho người BAH.

Tại xã không có hộ là người DTTS ảnh hưởng bởi dự án.

IV. Kết luận

Các bên liên quan thống nhất chủ trương thực hiện dự án. Yêu cầu nhà thầu thi công sớm triển khai công trình để người dân sớm được hưởng lợi.

Quá trình thi công cần chú ý việc chuyên chở vật liệu, nhằm hạn chế những ảnh hưởng tiêu cực đến người dân khu vực xung quanh.

Cuộc họp các bên thống nhất và kết thúc vào lúc .....ngày.....tháng.....năm 2014

Đại diện cộng đồng

Đại diện UBND xã

Võ Văn Trí

Đại diện Ban QLDA tỉnh

GIÁM ĐỐC

Ngô Đình Thiện

Đại diện tư vấn

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Xuân Phước, ngày 15 tháng 05 năm 2014

DỰ ÁN PHÁT TRIỂN NÔNG THÔN TỔNG HỢP CÁC TỈNH MIỀN TRUNG – KHOẢN VAY BỔ SUNG

DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP

(Tham vấn cộng đồng về chính sách an toàn: Môi trường, Tái định cư, Giới và Dân tộc thiểu số

Tên tiểu dự án: Nâng cấp đập dâng Suối Cấu và đường giao thông.

Xã Xuân Phước, huyện Đồng Xuân, tỉnh Phú Yên

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
1	Nguyễn Thị Thường	Nữ	Xuân Phước		
2	Nguyễn Thị Vân Thư	"	"	Thư	
3	Lê Thị Lý Huyền	"	"	Lý	
4	Trương Thị Hinh	"	"	Hinh	
5	Trần Thị Diệp	"	"	Diệp	
6	Nguyễn Thị Kim Thoa	"	"	Thoa	
7	Lê Thị Hân	"	"	Hân	
8	Hồ Thị Nga	"	"	Nga	
9	Đào Thị Hiệp	"	"	Hiệp	
10	Võ Thị Mỹ Dung	"	"	Dung	
11	Đỗ Thị Ánh Hồng	"	"	Hồng	
12	Phan Thị Thường	"	"	Thường	
13	Phan Thị Hoa	"	"	Hoa	

STT	Họ và tên	Giới tính	Địa chỉ	Ký tên	Ghi chú
26	Lương Thanh Đông	Nam	Xuân Phước		
27	Nguyễn Ngọc Tuấn	"	"		
28	Lê Thăng Hội	"	"		

Đại diện cộng đồng

Đại diện UBND xã

Võ Văn Trí

Đại diện Ban QLDA tỉnh

GIÁM ĐỐC

Ngô Đình Thiện

Đại diện tư vấn

Annex 2: Photos of public consultation meeting

Photo 7: Public consultation in Xuan Phuoc commune

Photo 8: Public consultation in Xuan Phuoc commune

Annex 3: Data Source

1. PPMU of Phu Yen province, subproject upgrading Suoi Cau weir and access road, 2014.
2. PPMU of Phu Yen province, Basic Design Explanation of upgrading Suoi Cau weir and access road, 2014.
3. Xuan Phuoc Commune People's Committee, Annual Report on Social Economy, December 2013.

Annex 4: Environmental monitoring forms

Environmental Compliance Monitoring Form for Construction Package

Part A: General Project Information

Subproject Name:_____

SIR Code:_____ Subproject Package #:_____ Activity Sector:_____

Province:_____ Districts: _____

Design and Supervision Consultant Firm:_____

Construction Company Name:_____ Contract Date: _____

Contract Amount:_____ Contract Duration (days)_____

Person Responsible: _____ Phone _____

PPMU EMO:_____ Phone _____

Part B: Monitoring checklist

Performance Indicator 1. Design and Preparations

The PPMU to complete 1-4 in conjunction with the subproject design consultant at the time the project is tendered. Date of Monitoring:_____

	Yes	No	Remarks
1. Have all UXO been cleared prior to commencement of construction?			
2. Does the subproject design meet applicable engineering safety and public health standards?			
3. Have the resettlement provisions been disclosed to the affected communities and compensation made to affected persons or households?			
4. For the applicable subproject type:			
a. Roads, embankments, irrigation works and coastal protection: does the design provide cross drainage to prevent flooding?			
b. Markets: does the design provide washing facilities and toilets in the market area?			

The construction Supervision consultant (CSC) to complete 5-10 with the PPMU and construction contractor at the time of start-up. Date of Monitoring:_____

5. Has the contractor prepared a Site EMP?			
6. Has the contractor posted a public notice regarding the nature, extent and cost of the project?			
7. Are locations for mixing plants sufficiently distant from houses, schools and hospitals?			
8. Are agreements in place with owners for temporary use of land for worker camps and construction yards?			
9. Have spoil disposal sites been selected in consultation with local authorities?			
10. Are official permits on record for quarry sites and borrow pits?			
Score (1-10; 10 total)			(%)

Performance Indicator 2. Worker Provisions

The CSC to complete 11-16 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring:_____

	Yes	No	Remarks
11. Were local authorities consulted in the planning for the location of construction worker housing?			
12. Are supervisors or other site personnel trained in basic first aid emergency response measures?			
13. Are first aid kits readily available to workers at the job site along with instructions for use?			
14. Has the contractor or Inspector from the Department of Health undertaken an awareness program for communicable diseases/HIV-AIDS?			
15. Has the contractor provided safety equipment (hard hats, ear plugs, dust masks, safety boots and glasses) to workers and training in use?			
16. Are construction camps equipped with adequate water supply, sanitary toilets, washing facilities and facilities for waste collection and storage?			
Score (11-16; 6 total)			(%)

Performance Indicator 3. Biodiversity

The CSC should complete 17-21 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring:_____

	Yes	No	Remarks
17. Does the project avoid encroaching on natural forests or wetlands?			
18. Does the project avoid adverse effects on flow of natural streams and water quality?			
19. Are worker camps located outside of forested areas and has the contractor restricted access of workers to forests, fishing and hunting?			
20. Does the contractor obtain fill materials only from pre-existing quarries, or from borrow pits within the strict limits of the construction zone?			
21. For irrigation sector projects, are effects on agricultural biodiversity limited through use of integrated pest management?			
Score (17-21; 5 total)			(%)

Performance Indicator 4. Community Based Monitoring

The CSC to complete 22 and 23 in conjunction with the PPMU and construction contractor following commencement of construction. Date of Monitoring:_____

	Yes	No	Remarks
22. Has the contractor posted a public notice regarding complaints from the community?			
23. Has there been a public consultation regarding construction, environmental impact, and the community complaints system?			
Score (22-23; 2 total)			(%)

Outcome of Public Consultation:

Date: _____ Location: _____

Topics covered in presentation: _____
_____

Comments from Attendees:

Performance Indicator 5. Community Values and Safety

Items 24 – 35 should be inspected quarterly. Date of Monitoring:_____

	Yes	No	Remarks
24. Is temporary access provided to adjacent properties as needed?			
25. Is permanent access to adjacent properties reinstated on completion of a segment of work?			
26. Are construction hours adjusted around houses, hospitals and schools to minimize disturbance?			
27. Does the contractor limit the scope of construction in progress to minimize community impacts?			
28. Are physical impacts on public infrastructure and service disruption minimized?			
29. Are materials transported on approved haul routes?			
30. Are construction equipments maintained in good condition?			
31. Do vehicles operate within legal speed limits?			
32. Are material loads traveling on public routes covered?			
33. Is dust suppressed by watering exposed surfaces?			
34. Has the contractor installed signs and lighting in vicinity of works on public roads?			
35. Is access to the construction site restricted to the public?			
Score (24-35; 12 total)			(%)

Performance Indicator 6. Hydrology/Water Pollution

Items 36 – 43 should be inspected quarterly. Date of Monitoring:_____

	Yes	No	Remarks
36. Are construction camps maintained in a clean and hygienic condition?			
37. Are oil, fuel and chemicals stored in enclosed areas (dyked or covered)?			
38. Is discharge of wastewater into water bodies used for water supply avoided?			
39. Is clearing activity suspended during rains?			
40. Does the contractor prevent discharge of concrete trucks to waterways?			
41. Have existing drainage patterns been maintained during construction?			
42. Are areas of standing water in the construction area drained and backfilled?			
43. Are sediment controls installed upslope of waterways?			
Score (36-43; 8 total)			(%)

Performance Indicator 7. Project Completion

Items 44 – 50 should be inspected prior to finalizing the construction works. Date of Monitoring:_____

	Yes	No	Remarks
44. Have drainage fixtures, curbs, road shoulders and ditch slopes been finished out to prevent hazard to the public during use?			
45. Are ground surfaces in the project area graded to prevent water from collecting?			
46. Have all construction debris, tree cuttings, excess dirt, rubble and scrap been removed from the construction zone?			
47. Have all pits been filled in and graded to drain, underground tanks (including septic tanks) removed and holes backfilled?			
48. Are all waste products removed from the construction site, equipment yards and worker camps, including oil waste, scrap materials and equipment, building materials and domestic waste?			
49. Have all points of access (drives, walks) and utilities (water supply, power, communications) to public and private property been restored to original condition?			
50. Have all complaints by the local community and individuals been resolved by the Contractor?			
Score (44-50; 7 total)			(%)

Performance Tracking

Performance Tracking consists of three sections:

a. Performance Follow-up, where performance shortfalls noted in prior monitoring are listed and checked against current monitoring results.

b. Community Complaints, where issues raised by the affected community are registered, tracked and outcomes recorded.

c. Performance Indicator Results, where environmental performance against indicators are recorded.

Section 1: Performance Follow-up

Column 1	Column 2	Column 3	Column 4	Column 5
Performance variable (#) / Date Observed	Reason for negative rating	Was agency responsible notified? / Date	Was problem corrected before next monitoring?	Was performance indicator adjusted?

Section 2: Community Complaints

Column 1	Column 2	Column 3	Column 4	Column 5
Person Registering Complaint / Date	Summary of Complaint	Was agency responsible notified? / Date	Was problem corrected before next monitoring?	Was Person satisfied with Action?

Section 3: Performance Indicator Results

Project Name:_____ SIR No.:_____ Package #:_____Province:_____

Project Start Date:_____

	Startup	Rev.	Q1	Q2	Q3	Q4	Average	Completion	Rev.	Final
Recording Date:										
1. Design and Preparations										
2. Worker Provisions										
3. Biodiversity										
4. Community Based Monitoring										
5. Community Values / Safety										
6. Hydrology/Water Pollution										
7. Project Completion										

Submittal Date:_____ For Calendar Quarter: _____

Inspector:_____

(Signature)

Annex 5: Environmental requirements Included Bidding Document for Construction Contractor

POTENTIAL IMPACTS	MITIGATION MEASURES	TREATMENT FACILITIES
Dust, vegetation clearing, noise, water quality or other impacts from development of borrow areas for construction materials	▪ Operation license of Phu Hoi borrow pit must be obtained before exploiting construction materials. The operations licenses will include approved environmental certificate. Hence, dust and noise generated by exploitation activities will be minimized. ▪ Check the environmental permission/ certification of other mines to ensure that environmental impacts and mitigation measures have been considered by owners. ▪ When transporting construction materials, canvas must be used to cover to avoid dust. ▪ Construction equipment and machines must be in good condition and be maintained regularly.	
Erosion or sedimentation caused during clearing or earthworks	▪ Construct in section and completed each section before move to the next one to minimize area of land clearance and duration of works within the area; ▪ Restoration of areas cleared for the construction site of each section before move to the next section; ▪ Replant vegetation cover after construction activity finishes. ▪ Avoid clearing activities during the rainy season from September to December	Sediment fences, traps.
Impacts arising from temporary storage areas including dust, noise and water quality	▪ Store material in impervious ground and cover with canvas; ▪ Reasonably arrange the locations for materials gathering and gather materials neatly along the proposed road and the 4km canal and far from residential area. ▪ Avoid store material along the section of the proposed road which is going through Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. In case of unavoidable, the contractor should concentrate to work in this section and remove the material storage site as soon as possible. ▪ Material transportation is strictly forbidden in the evening due to storage areas are located next to residential areas; ▪ Drainage ditches within the storage area should be controlled and properly transport unused material to disposal sites near the construction sites.	

POTENTIAL IMPACTS	MITIGATION MEASURES	TREATMENT FACILITIES
Pollution of waterways, aquatic environments or underground water from wastes, chemicals, waste water or disturbance of contaminated soils	▪ Store chemicals in secure area, with concrete floor and weatherproof roof and away from watercourses and floodplains; ▪ Ensure construction equipment and vehicles are maintained in good conditions to avoid leakage; ▪ Provide rubbish bins and containers at camping sites and construction sites. ▪ Collect debris, sludge at the construction sites and transport waste regularly from the sites to the disposal sites ▪ Install sanitary toilets with septic tanks following sanitation regulation and washing facilities at construction camps. ▪ Avoid directing discharges from concrete mixing equipment to to Suoi Cau and the canal	Tanks for storing chemicals, sanitary toilets, rubbish bins and containers
Dust or exhaust from construction equipment	▪ Machines and devices should be provided with registration certificates on technical safety and environmental protection in accordance with Decision No. 35/2005/QD-BGTVT ▪ When transporting construction materials, implement strictly dust suppression measures such as watering of exposed surfaces and covering the trucks with canvas; ▪ Set speed limit (less than 40km/h) for transportation vehicles while travelling through Xuan Phuoc commune's road especially at the Xuan Phuoc Primary School. ▪ Ensure that all construction vehicles and equipment are well maintained;	Canvas, washing facilities
Noise is generated from construction equipment	▪ Ensure that all construction vehicles and equipment are well maintained; ▪ Consult Xuan Phuoc CPC for a suitable construction plan and material transportation route. ▪ Consult the teacher in Xuan Phuoc Primary School for a suitable construction and material transportation time. ▪ Reasonably coordinate the number of transportation vehicles, transportation time and set speed limit below 40 km/h when crossing Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets. ▪ Avoid constructing at the rest hours of local people (from 7pm to 7am next day); ▪ Inform Xuan Phuoc CPC and local people in the subproject area about schedule and duration of construction works. Collect feedbacks from the community through head of hamlets and CPC.	
Impact on traffic or conditions for property access	▪ Install signal lamps and sign panels at T-junction between Xuan Phuoc commune's road and road No. 642 and at the position of Xuan Phuoc Primary School. Limit the speed of means of transport on the route especially in Xuan Phuoc commune's road (below 40 km/h); ▪ When it is necessary, build bypass roads to facilitate people's traveling; ▪ Notify Xuan Phuoc CPC and local communities of Phu Hoi, Cay Xoai 1 and Cay Xoai 2 on the schedule and duration of construction.	

POTENTIAL IMPACTS	MITIGATION MEASURES	TREATMENT FACILITIES
Impact on public infrastructure such as communication, electricity wires, inter-commune road, etc.	▪ Inform local authorities in advance about the construction and material transportation schedule. Place information about the subproject in Xuan Phuoc CPC and other public offices in Phu Hoi, Cay Xoai 1 and Cay Xoai 2 hamlets; ▪ Minimize using heavy trucks for transporting materials in wet weather to avoid accidents from crashing into houses or works at road edge due to slippery roads; ▪ Contractors must repair material transportation roads if they damage them. ▪ Comply traffic regulations (limit the velocity of trucks – below 40 km/h when travelling in Xuan Phuoc commune's road); ▪ Install warning signs at junctions and Xuan Phuoc Primary School, Xuan Phuoc CPC.	
Construction workers cause social disruption	▪ Consult with Xuan Phuoc CPC to arrange accommodation for workers (to avoid any negative impacts on local people's activities) and register temporary residence card for them; ▪ Request workers to collect waste as regulation and ensure that their construction camps are maintained in clean and hygienic conditions; ▪ Raise workers' awareness of environmental sanitation, infectious diseases as well as prevention of HIV/AIDS and sexually transmitted diseases and dissemination on social evils like drugs, gambling, prostitution, violence, stealing, etc.	
Generation of excess spoil	▪ Gather all excess spoil in a place with impervious ground and far from residential area ▪ Regularly transfer the spoil to designated dumping site in Xuan Phuoc commune. ▪ Transportation truck must covered with canvas and ensure no spoil spill during transportation.	
Risk to health and safety to local people or construction workers	▪ Provide workers with safety equipment as masks, safety boots, helmets, gloves, protection clothes... and remind them to use while working. Workers working in high noise area (compaction, excavation…) should be equipped with ear protectors. ▪ Equip first-aid kits, suitable fire extinguishers in worker camps and fuel storage sites. ▪ Raise workers' awareness on working safety by training them before construction commencement. ▪ Set up restriction signs on the construction site; warning signs, barriers in areas prone to insecurity such as deep holes/pits, narrow sections etc	Safety equipment, medical cabinet, fire extinguisher
Causes waste disposal problems from solid waste generated during construction activity or municipal waste generated in construction camps	▪ Provide rubbish bins (02 bins at the main camp; 01 bin for each camp along the canal sides and its management road and request workers to collect waste and not to leave litter into any water resources such the canal and Suoi Cau weir area; ▪ Provide containers to collect construction waste and hazardous waste such as used oil at construction sites. ▪ Collect solid waste regularly and transport it to the designated disposal site in Xuan Phuoc commune.	Rubbish bins and containers

POTENTIAL IMPACTS	MITIGATION MEASURES	TREATMENT FACILITIES
Impacts on irrigation activities	▪ Construction of the Suoi Cau weir and upgrading canals should avoid winter-spring crop time to minimize the impact on the main crop of local people. ▪ The Contractor should coordinate with irrigation authority, commune's irrigation staff and cultivation households in water supply area of the subproject to reach agreement on water supply duration (construction suspension), construction time (should be implemented at the time when irrigation activities are not done); ▪ Commune's irrigation staff, irrigation exploitation enterprise or relevant authorities should early inform households and contractor on water supply schedule so that they can make plan on their own initiative; ▪ PPMU and the Contractor should pay attention to mitigation measures to reduce damages or to implement compensation for arising impacts due to stop of water supply at cultivation area, etc ▪ Proposed construction time for upgrading primary canals: after harvesting: 1 June 2016 to 31 December 2016. Construction solution is construction time should be implemented at the time when irrigation activities are not done following stop of water supply alternatively, irrigation time: 10 days, stop of water supply: 15 days	
Impacts due to inappropriate enivronmental recovery responsibility	▪ Remove all of the construction machines and construction tools out of the construction sites upon construction complete. ▪ Perform industrial clean in all construction sites and temporary acquired land areas upon the construction complete and before hand over them back. ▪ Compensate adequately for the temporary acquired land area that could not be recovered ▪ Plant tree to recover the vegetation coverage. ▪ Taking photos of the clearance site before clearance and after recovery process complete to ensure the vegetation coverate has been recovered adequately.	